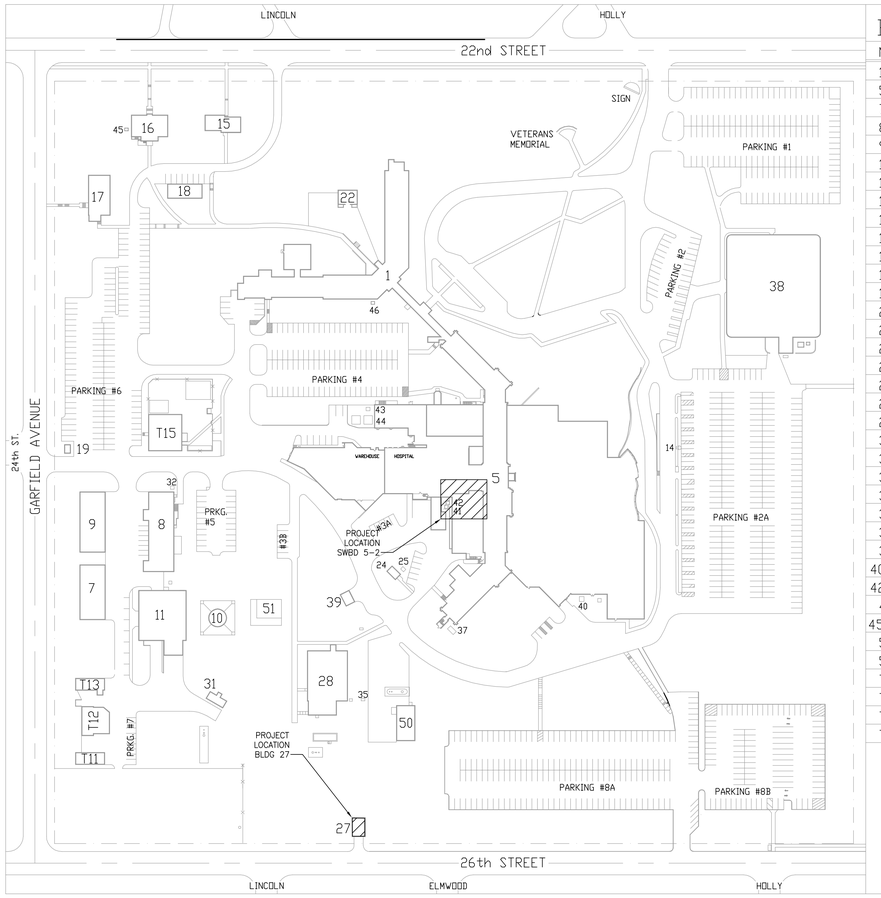
VICINITY & STAGING MAP



BUILDING SCHEDULE

NO.	BUILDINGS
1	N.H.C.U.
5	HOSPITAL BUILDING
7	UTILITY SHOPS
8	LAUNDRY
9	STATION GARAGE
10	WATER TANK
11	BOILER PLANT
14	FLAGPOLE
15	HOPTEL BUILDING
16	MENTAL HEALTH & BLDG. MGMT.
17	ENGINEERING and A & MM
18	GARAGE
19	GAS METER HOUSE
21	RECREATION SHELTER - HOSPITAL
22	RECREATION SHELTER - N.H.C.U.
24	AUXILIARY POWER UNIT
25	PAD MOUNT TRANSFORMER
27	ELECTRICAL SWITCHGEAR
28	RESEARCH BUILDING
29	PAD MOUNT TRANSFORMER
31	SALT STORAGE BASIN
32	PAD MOUNT TRANSFORMER
34	PAD MOUNT TRANSFORMER
35	POWER J-BOX #1
37	A/C PAD - I.C.U.
38	REGIONAL OFFICE BUILDING
39	OXYGEN STORAGE PAD
40,41	PAD MOUNT TRANSFORMER
42,43	PAD MOUNT TRANSFORMER
44	COOLING TOWER PAD
45-47	PAD MOUNT TRANSFORMER
50	GENERATOR BUILDING
51	EMERGENCY MANAGEMENT BUILDING
T11	STORAGE BUILDING
T12	STORAGE BUILDING
T13	STORAGE BUILDING
T15	CHILD DAYCARE

Department of Veterans Affairs
Sioux Falls VA Health Care System
Upgrade Campus Electrical Service

Sioux Falls, South Dakota

CONSTRUCTION DOCUMENTS

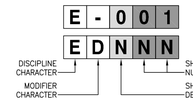
APRIL 17, 2013

VA Project # 438-13-121

TSP Project # 04121073 PRIORITY 2

INDEX TO DRAWINGS

SHEET IDENTIFICATION



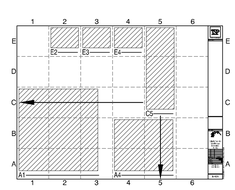
MODIFIER CHARACTER DESIGNATORS

S = SITE
D = DEMOLITION
L = LIGHTING
P = POWER
Y = AUXILIARY
I = INSTRUMENTATION
T = TELECOMMUNICATIONS

SHEET TYPE DESIGNATORS

0 = GENERAL (SYMBOLS LEGEND)
1 = PLANS (HORIZONTAL VIEWS)
2 = ELEVATIONS (VERTICAL VIEWS)
3 = SECTIONS (SECTIONAL VIEWS)
4 = LARGE SCALE VIEWS
5 = DETAILS
6 = SCHEDULES AND DIAGRAMS
7 = USER DEFINED
8 = USER DEFINED
9 = 3D REPRESENTATIONS

COORDINATE SYSTEM



ABBREVIATIONS

AFC	ABOVE FINISHED COUNTER, INSTALLED DEVICE 8" ABOVE COUNTERTOP	FLUOR	FLUORESCENT	NC	NORMALLY CLOSED
AFF	ABOVE FINISHED FLOOR	FLA	FULL LOAD AMPERES	NO	NORMALLY OPEN
AFG	ABOVE FINISHED GRADE	FBO	FURNISHED BY OWNER	PNL	PANEL
AHU	AIR HANDLING UNIT	F	FUSE	PH	PHASE
ALUM	ALUMINUM	FVNR	FULL VOLT NON-REVERSE	PL	PILOT LIGHT
AMP/A	AMPERE	GC	GENERAL CONTRACTOR	PVC	POLYVINYL CHLORIDE, CONDUIT
A/E	ARCHITECT/ENGINEER	GND	GROUND	PF	POWER FACTOR
X-NC	AUXILIARY CONTACTS, NORMALLY CLOSED	GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER	PRV	POWER ROOF VENTILATOR
X-NO	AUXILIARY CONTACTS, NORMALLY OPEN	HOA	HAND-OFF-AUTOMATIC SELECTOR SWITCH	RECPT	RECEPTACLE
CUH	CABINET UNIT HEATER	HTR	HEATER	RMC	RIGID METAL CONDUIT
CLG	CEILING	HP	HORSEPOWER	SN	SOLID NEUTRAL
CKT	CIRCUIT	IC	INTERRUPTING CIRCUIT	SW	SWITCH
CS/CB	COMBINATION STARTER, CIRCUIT BREAKER DISCONNECT	IG	ISOLATED GROUND	TEL	TELEPHONE
CS/FD	COMBINATION STARTER, FUSED DISCONNECT	J-BOX	JUNCTION BOX	TR	TAMPER RESISTANT
CS/NFD	COMBINATION STARTER, NON-FUSED DISCONNECT	KV	KILOVOLT	TCC	TEMPERATURE CONTROLS CONTRACTOR
C	CONDUIT	KVA	KILOVOLT AMPERE	TSTAT	THERMOSTAT
CU	COPPER	KW	KILOWATT	XFMR	TRANSFORMER
KCM	THOUSAND CIRCULAR MILS	KWH	KILOWATT HOUR	TYP	TYPICAL
DISC	DISCONNECT	LTG	LIGHTING	UH	UNIT HEATER
DISTR	DISTRIBUTION	MDP	MAIN DISTRIBUTION PANEL	UV	UNIT VENTILATOR
DIV	DIVISION	MLO	MAIN LUGS ONLY	VFD	VARIABLE FREQUENCY DRIVE
DF	DOUBLE FACE	MAN	MANUAL	V	VOLT
DN	DOWN	MMS	MANUAL MOTOR STARTER	VA	VOLT AMPERE
EC	ELECTRICAL CONTRACTOR	MFRS	MANUFACTURERS	VAC	VOLTS, ALTERNATING CURRENT
EMT	ELECTRICAL METALLIC TUBE	MC	MECHANICAL CONTRACTOR	VDC	VOLTS, DIRECT CURRENT
EWC	ELECTRIC WATER COOLER	M	METER	WTR	WATER
EM	EMERGENCY	MCC	MOTOR CONTROL CENTER	W	WATT
EQUIP	EQUIPMENT	MSS	MOTOR STARTER SWITCH	WP	WEATHER PROOF
EF	EXHAUST FAN	MTD	MOUNTED	W/	WITH
EPRF	EXPLOSION PROOF	MOA	MULTI-OUTLET ASSEMBLY	W/O	WITHOUT
FA	FIRE ALARM	NEC	NATIONAL ELECTRICAL CODE	Y	WYE CONNECTED
		NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION		

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
6729
DARRELL L. BREN
REG. NO.
DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104

phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com

TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: COVER SHEET

Approved Project Director:

Project Title: Upgrade Campus Electrical Service

Project Number: 438-13-121

Building Numbers: 5 AND 27

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JWN

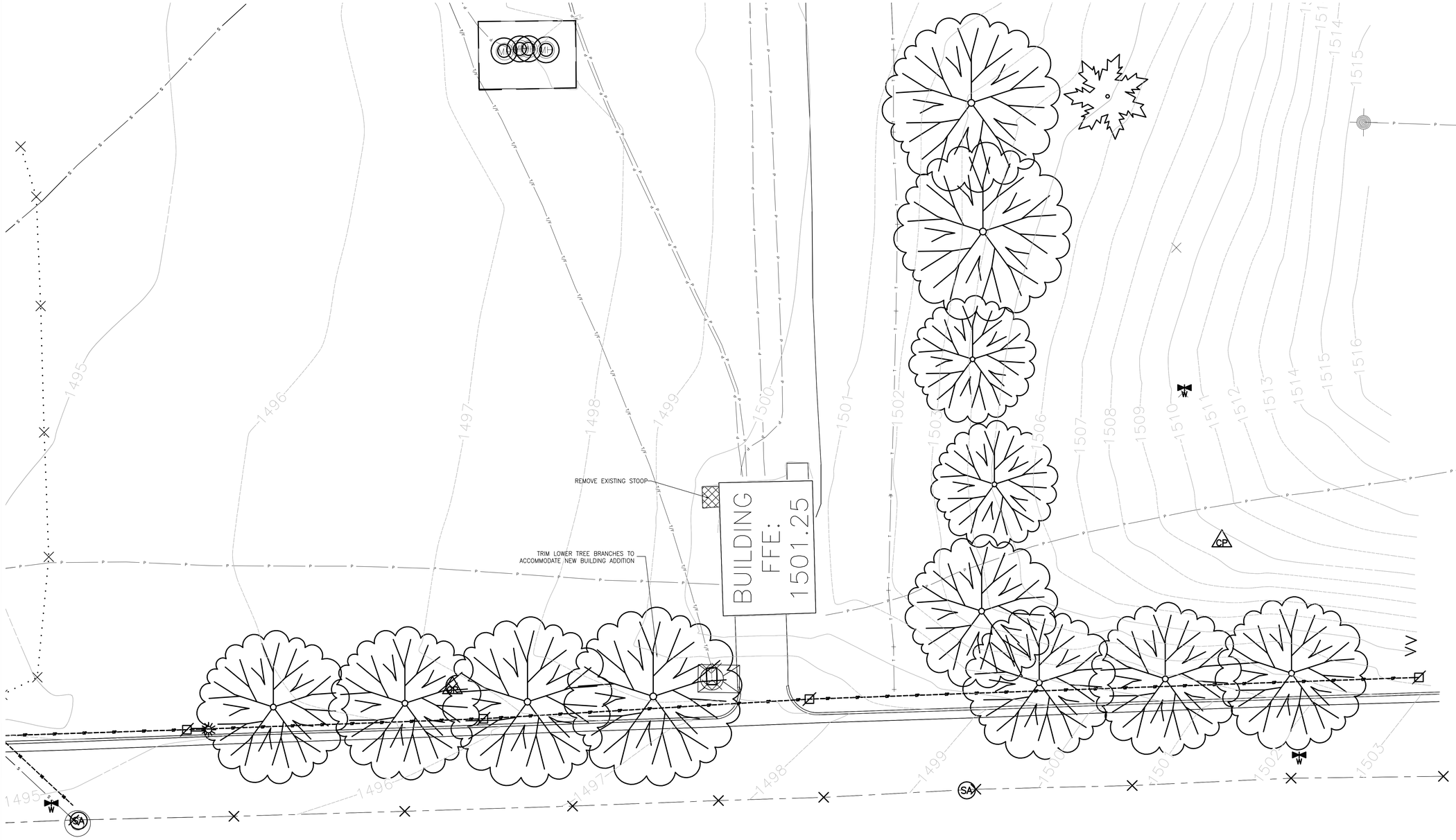
Drawing Number: GI001

Dwg. 1 of 14

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



A1 SITE REMOVAL PLAN
SCALE: 1" = 10'-0"

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 3938
DONALD C. WEBER
SOUTH DAKOTA
DATE: 4/17/2013

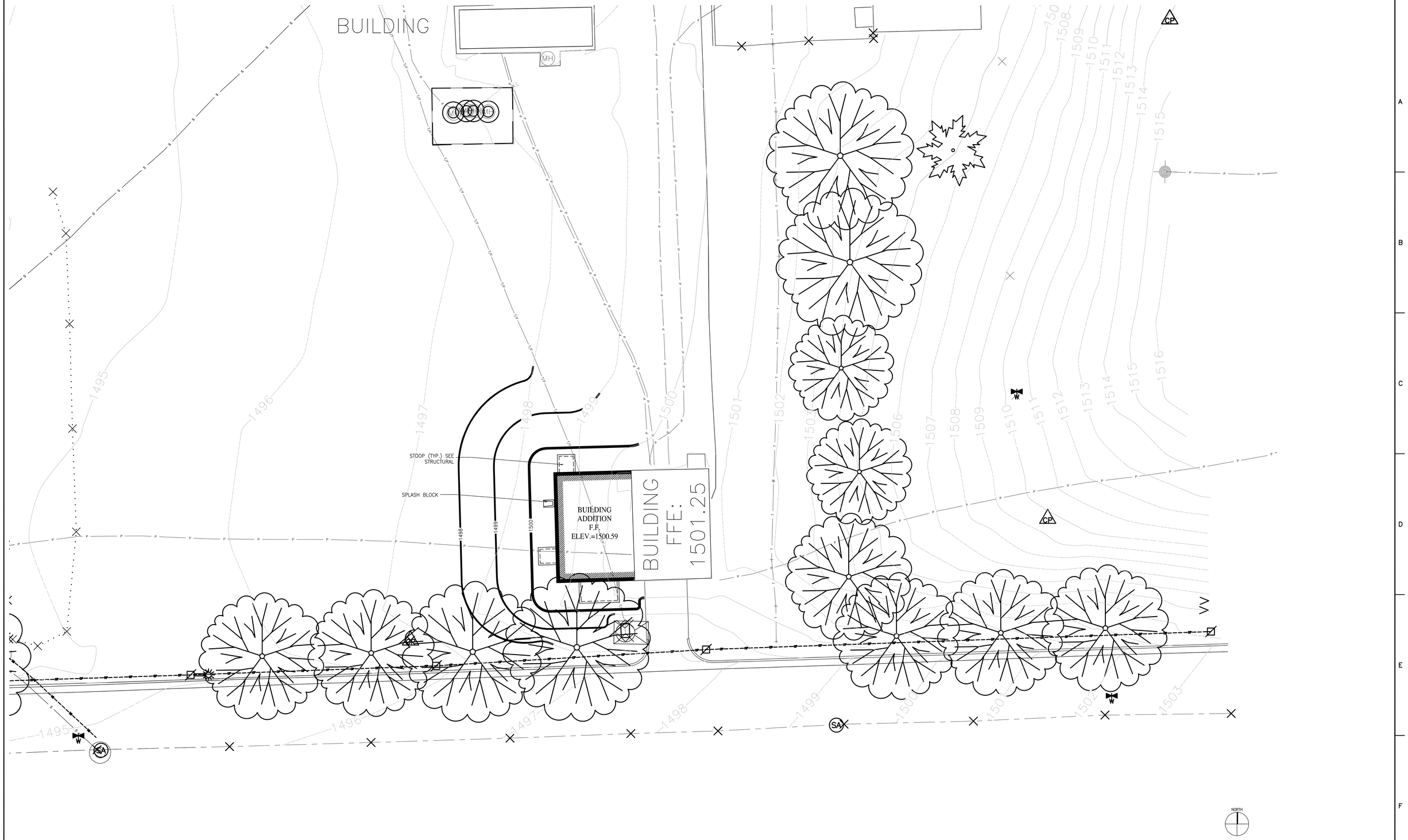
ARCHITECT/ENGINEERS:

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
To Solve. To Excel. Together.
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: SITE REMOVAL PLAN
Approved Project Director:
Project Title: Upgrade Campus Electrical Service
Location: Sioux Falls, South Dakota
Date: 04/17/2013 | Checked: DCW | Drawn: DCW
Project Number: 438-13-121
Building Numbers: 5 AND 27
Drawing Number: C-101
Dwg. 2 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



A1 SITE LAYOUT & GRADING PLAN
SCALE: 1" = 10'-0"

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

FINAL CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 3938
DONALD C. WEBER
NORTH DAKOTA
DATE: 4/17/2013

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: SITE LAYOUT AND GRADING PLAN
Approved: Project Director
Project Title: Upgrade Campus Electrical Service
Location: Sioux Falls, South Dakota
Date: 04/17/2013
Checked: DCW
Drawn: DCW
Project Number: 438-13-121
Building Numbers: 5 AND 27
Drawing Number: C-102
Dwg. 3 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

STRUCTURAL GENERAL NOTES

DESIGN CODE

1. UNITED STATES DEPARTMENT OF VETERAN AFFAIRS STANDARD AND DESIGN GUIDE
2. INTERNATIONAL BUILDING CODE, 2009
3. BUILDING CODE FOR THE CITY OF SIOUX FALLS, SD

DESIGN LOADS

1. FLOOR LOADS: MECHANICAL FLOOR LIVE LOAD – 125 PSF
2. ROOF LIVE LOAD
   GROUND SNOW LOAD Pg = 43 PSF; FLAT ROOF SNOW LOAD Pf = 33 PSF
   SNOW EXPOSURE FACTOR Ce = 1.0; SNOW LOAD IMPORTANCE FACTOR I = 1.1
   THERMAL FACTOR Ct = 1.0
   PLUS APPLICABLE SLIDING, DRIFTING AND UNBALANCED SNOW LOAD INCREASES
3. CONCENTRATED LOADS AS SHOWN IN IBC TABLE 1607.1 SHALL BE ADDED TO THE UNIFORM LOADS SHOWN ABOVE.
4. WIND LOADS
   BASIC WIND SPEED = 90 MPH BUILDING CATEGORY TYPE III (ASCE 7–05)
   WIND IMPORTANCE FACTOR = 1.15 WIND EXPOSURE = B
5. SEISMIC LATERAL LOADS (ASCE 7–05)
   SEISMIC OCCUPANCY GROUP III SPECTRAL RESPONSE COEFFICIENTS
   SEISMIC IMPORTANCE FACTOR = 1.25 SS (0.2 SEC)= 0.11g
   SITE CLASS D; SEISMIC DESIGN CAT. A S1 (1.0 SEC)= 0.04g

MATERIALS GRADES AND STRENGTHS

1. CAST–IN–PLACE CONCRETE
   FOOTINGS AND FOUNDATIONS – 4000 PSI
   EXTERIOR & INTERIOR SLAB ON GRADE – 4000 PSI
2. MASONRY
   CONCRETE MASONRY UNITS – ASTM C90
   MASONRY CORE FILL AND BOND BEAMS – 3000 PSI
3. REINFORCING STEEL
   BARS – ASTM A615 (GRADE 60)
4. STRUCTURAL STEEL
   WIDE FLANGE SHAPES – ASTM A992 (Fy=50 KSI)
   PLATES AND OTHER SHAPES – ASTM A36 (Fy=36 KSI)
   HIGH STRENGTH BOLTS, UNO – A325N
   ANCHOR BOLTS/RODS – ASTM F1554, GRADE 36

GENERAL

1. THE INFORMATION SHOWN ON THE STRUCTURAL DRAWINGS IS NOT TO BE SCALED, AS THE ITEMS SHOWN MAY NOT BE TO SCALE FOR THE SPECIFIC LOCATION.
2. EXAMINE ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS TO DETERMINE LOCATION AND DIMENSIONS OF OPENINGS, SLEEVES, REVEALS, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS NOT SHOWN ON STRUCTURAL DRAWINGS. NO OPENINGS OR SLEEVES SHALL BE CUT OR PROVIDED IN WALLS OR FLOOR CONSTRUCTION WITHOUT APPROVAL BY THE A/E.
3. BEFORE FABRICATION AND ERECTION OF ANY MATERIALS, FIELD VERIFY ALL EXISTING ELEVATIONS, DIMENSIONS AND CONDITIONS AS SHOWN ON THE DRAWINGS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER AT ONCE FOR RESOLUTION.
4. STRUCTURAL MEMBERS INCLUDING JOISTS, SLABS, BEAMS AND WALLS ARE DESIGNED FOR "IN PLACE" LOADS. CONTRACTOR IS RESPONSIBLE FOR BRACING, WITHOUT OVERSTRESSING, ALL STRUCTURAL ELEMENTS (AS REQUIRED AT ANY STAGE OF CONSTRUCTION) UNTIL COMPLETION OF THIS PROJECT.

FOUNDATIONS

1. FOOTINGS HAVE BEEN DESIGNED FOR A MAXIMUM SOIL BEARING PRESSURE OF 1500 PSF TO MATCH EXISTING REPORTS FOR ADJACENT BUILDINGS. THE CONTRACTOR IS TO EMPLOY A TESTING SERVICE TO VERIFY THIS DESIGN ASSUMPTION. NO FOUNDATION WORK SHALL PROCEED UNTIL THE VERIFICATION REPORT HAS BEEN REVIEWED AND APPROVED BY THE ARCHITECT/ENGINEER. IF THE SOIL AT THE FOOTING ELEVATIONS SHOWN IS OF QUESTIONABLE BEARING VALUE, NOTIFY THE ARCHITECT/ ENGINEER AT ONCE FOR RESOLUTION. FOOTINGS ARE SUBJECT TO CHANGE DEPENDING ON SOIL CONDITIONS ENCOUNTERED.
2. WATER SHALL NOT BE PERMITTED TO POND IN FOOTING EXCAVATION. KEEP EXCAVATION DRY. FAILURE TO DO SO WILL BE CAUSE FOR REQUIRING CONTRACTOR TO REMOVE WATER DAMAGED SOILS AND REPLACE WITH CONTROLLED FILL AS DIRECTED.
3. REMOVE ANY ABANDONED SEWER OR SERVICE LINE ENCOUNTERED DURING EXCAVATION WITHIN THE BUILDING LINES. SHOULD SUCH LINES BE FOUND BELOW OR ADJACENT TO FOOTING LOCATIONS, NOTIFY THE A/E.
4. WHERE FILL MATERIAL IS PLACED ON BOTH SIDES OF WALLS, IT SHALL BE PLACED IN LAYERS ALTERNATELY ON OPPOSITE SIDES TO MAINTAIN LEVELS THAT WILL AVOID DISPLACEMENT OF, OR DAMAGE TO, THE WALLS. WHERE FILL MATERIAL IS PLACED ON ONE SIDE OF A WALL, THE WALL SHALL BE ADEQUATELY SHORED AND BRACED OR THE MATERIAL SHALL NOT BE PLACED UNTIL SUPPORTING FLOOR SLABS HAVE BEEN POURED AND SET. NO FILL OR BACKFILL SHALL BE "SETTLED" BY THE USE OF WATER.
5. PROVIDE MINIMUM 6 INCHES DRAINAGE COURSE BELOW ALL INTERIOR, EARTH SUPPORTED, CONCRETE SLABS UNLESS NOTED OTHERWISE. REFERENCE PLANS AND SPECIFICATIONS.
6. CONTINUOUS FOOTINGS SHALL BE STEPPED AT A SLOPE OF ONE VERTICAL TO ONE HORIZONTAL AT LOCATIONS NOTED ON THE PLANS. (REF DETAIL F2/S501)
7. PROTECT IN–PLACE FOUNDATIONS AND SLABS ON GRADE FROM FROST PENETRATION UNTIL PROJECT COMPLETION.
8. SLOPE BETWEEN ADJACENT FOOTINGS OR EXCAVATIONS SHALL NOT EXCEED ONE VERTICAL TO TWO HORIZONTAL. STEP FOOTINGS DOWN AS NECESSARY TO MAINTAIN THIS SLOPE.
9. 15. AT LOCATIONS IN WHICH UTILITIES PENETRATE THE FOUNDATION WALL, PROVIDE A SLEEVE IN THE CONCRETE FOUNDATION WALL. (REF DETAIL F5/S501)

CONCRETE

1. CODE FOR REINFORCED CONCRETE DESIGN AND CONSTRUCTION IS ACI 318, LATEST EDITION.
2. ARRANGEMENT AND BENDING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI DETAILING MANUAL, LATEST EDITION
3. AT FLOOR DRAINS, SLOPE FLOOR UNIFORMLY THROUGHOUT THE ROOM TO THE DRAIN, UNLESS SHOWN OTHERWISE.
4. ALL REINFORCING BARS SHALL BE LAP SPLICED WITH THE GREATER LENGTH OF A CLASS B TENSION LAP SPLICE OR 50 BAR DIAMETERS (FOR #6 BARS AND SMALLER) OR 62 BAR DIAMETERS (FOR #7 AND GREATER), EXCEPT WHERE NOTED OR DETAILED OTHERWISE. STAGGER LAPS IN SLABS AND WALLS. SPLICE BARS IN GRADE BEAMS, STRUCTURAL SLABS, JOISTS, BEAMS, PILASTERS OR COLUMNS ONLY WHERE SHOWN ON DRAWINGS OR SCHEDULES APPROVED BY A/E.
5. MINIMUM CONCRETE COVER TO REINFORCING STEEL, UNO, SHALL BE AS FOLLOWS:

   SURFACES CAST AGAINST EARTH – 3"

   FORMED SURFACES IN CONTACT WITH EARTH OR EXPOSED TO WEATHER:
   #5 BAR OR SMALLER – 1–1/2"
6. DETAIL AND PROVIDE SUITABLE WIRE SPACERS, CHAIRS, TIES, ETC., FOR SUPPORTING REINFORCING STEEL IN THE PROPER POSITION WHILE PLACING CONCRETE. ALL CHAIRS SUPPORTED BY GRADE SHALL INCLUDE SAND PLATES.
7. BAR SUPPORTS, WHICH COME IN CONTACT WITH EXPOSED SURFACES, SHALL HAVE PLASTIC OR RUBBER TIPS OR BE STAINLESS STEEL.
8. PROVIDE HOOKED DOWELS OF SAME SIZE AND SPACING AS VERTICAL OR COLUMN REINFORCING AT THE FOUNDATION, UNLESS NOTED OTHERWISE. ALL HOOKED DOWELS SHALL BE TIED IN PLACE PRIOR TO CONCRETE PLACEMENT.
9. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT CORNERS AND INTERSECTIONS OF WALLS, BEAMS, BOND BEAMS, AND FOOTINGS. (REF DETAIL F3/S501)

CONCRETE (CONTINUED)

10. VERIFY LOCATION OF OPENINGS SHOWN THROUGH CONCRETE SLABS OR WALLS AND COORDINATE ANY ADDITIONAL REQUIRED OPENINGS WITH OTHER TRADES AND THE ARCHITECT/ENGINEER.
11. SIZE OF CONCRETE POURS BETWEEN CONSTRUCTION JOINTS SHALL BE LIMITED TO:

    FOUNDATION WALLS – UNLIMITED (FROST DEPTH – NON–EXPOSED)

    SLABS ON GRADE – 3600 SQ FT WITH MAXIMUM DIMENSION OF 60 FT PLACE IN LANE OR STRIP. FASHION WITH INTERMEDIATE CONTROL JOINTS AT APPROXIMATELY 15 FT.
12. CONCRETE EXPOSED TO FREEZING AND THAWING SHALL CONTAIN 5–7% ENTRAINED AIR.
13. ALUMINUM CONDUIT OR PIPING MAY NOT BE EMBEDDED IN ANY CONCRETE.
14. CALCIUM CHLORIDE IS NOT PERMITTED IN ANY CONCRETE ADMIXTURES.
15. SUBMIT MIX DESIGN TO ENGINEER/ARCHITECT FOR APPROVAL PRIOR TO PLACING ANY CONCRETE.
16. CURE CONCRETE ACCORDING TO ACI 308.1 OR A COMBINATION OF MOISTURE CURING, COVER CURING, CURING COMPOUNDS, OR CURING & SEALING COMPOUNDS.

MASONRY

1. PROVIDE VERTICAL REINFORCEMENT IN MASONRY WALLS THUS, UNO:
   EXTERIOR WALLS #5 @ 24" OC
2. DOWEL VERTICAL WALL REINFORCING TO FOUNDATION, FOOTING WITH 1'–4" BARS OF SAME SIZE, UNO.
3. REINFORCE EACH SIDE OF ALL OPENINGS AND AT CORNERS IN MASONRY WALLS WITH (2) #5 VERTICAL FULL HEIGHT.
4. REINFORCE ALL BOND BEAMS WITH (2) #5 BOTTOM CONTINUOUS. REINFORCING TO BEND 2'–0" AROUND ALL CORNERS OR USE 4'–0" CORNER BARS.
5. AT ALL UNFRAMED OPENINGS 3'–0" WIDE OR NARROWER, INCLUDING MECHANICAL AND ELECTRICAL OPENINGS, WHERE NO STEEL LINTEL IS INDICATED, PROVIDE REINFORCED CONCRETE BLOCK LINTELS. REINFORCE WITH 1–#5 PER 4" WALL THICKNESS. END BEARINGS 8" MINIMUM. NOTIFY A/E IF BEAM, JOIST OR COLUMN BEARING OCCURS ABOVE OPENING.
6. PROVIDE WELDED WIRE JOINT REINFORCING IN ALL MASONRY WALLS AT 16" O.C. MAXIMUM.
7. PROVIDE REINFORCING BARS AT LOCATIONS INDICATED ON THE DRAWINGS. LAP 48 BAR DIAMETERS AT SPLICES IN VERTICAL WALL REINFORCING AND 48 BAR DIAMETERS ELSEWHERE UNLESS NOTED OTHERWISE.
8. GROUT CORES IN 5'–0" MAXIMUM LIFTS UNLESS CLEAN–OUTS ARE PROVIDED, IN WHICH CASE 8'–0" MAXIMUM LIFTS MAY BE USED.
9. TIE VERTICAL REINFORCING TO JOINT REINFORCING AT 32" ON CENTER VERTICALLY TO MAINTAIN POSITIONING WHILE GROUTING.
10. PROVIDE 1–#5 VERTICAL BELOW BEAM AND LINTEL BEARINGS AND GROUT CORE FULL HEIGHT. BEARING DISTANCE SHALL BE A MINIMUM OF 8". BEAM OR LINTEL SHALL BE SET IN GROUT, 1/2" MINIMUM DEPTH. PROVIDE 1–#5 VERTICAL, FROM TOP OF FOUNDATION TO TOP OF WALL, IN CORES ADJACENT TO BEAM AND LINTEL BEARINGS AND GROUT CORE FULL HEIGHT.
11. ALL LINTELS AND LOOSE BRICK ANGLES TO BE TEMPORARILY SHORED UNTIL MASONRY HAS HARDENED.
12. CMU CORES CONTAINING VERTICAL REINFORCING SHALL BE GROUTED SOLID WITH CORE FILL CONCRETE. FILLING CORES WITH MORTAR IS NOT ACCEPTABLE.
13. PLACE CONTROL JOINTS IN MASONRY WALLS SUCH THAT NO STRAIGHT RUN OF MASONRY EXCEEDS 25'–0" OR 1–1/2 TIMES THE WALL HEIGHT, WHICHEVER IS LESS, UNO. CONTROL JOINTS SHALL BE PROVIDED WITHIN A DISTANCE OF 12'–0" OF CORNERS AND INTERSECTIONS. CONTROL JOINTS MAY NOT BE LOCATED ALONG THE EDGES OF WALL OPENINGS OR BETWEEN THE OPENINGS AND THE ADJACENT GROUTED JAMBS.
14. CONSTRUCT ALL MASONRY WALLS WITH A BOND BEAM AT THE TOP COURSE AND AT ROOF MEMBER BEARING LOCATIONS. THIS BOND BEAM IS TO BE REINFORCED WITH 2–#5 BARS, CONTINUOUS. PROVIDE ADDITIONAL BOND BEAMS SPACED AT A MAXIMUM OF 8'–0" OC VERTICALLY THROUGHOUT THE HEIGHT OF THE WALL. ANY VERTICAL REINFORCING IN THE WALL IS TO EXTEND FULLY INTO (OR THROUGH) BOND BEAMS.
15. MASONRY STRENGTH NOTES:

    F'm = 1500 PSI, EXCEPT WHERE NOTED OTHERWISE ON DRAWINGS. CONTRACTOR SHALL SUBMIT CERTIFICATION AND TESTING RESULTS AS REQUIRED TO ESTABLISH F'm BASED ON THE UNIT STRENGTH METHOD. MINIMUM COMPRESSIVE STRENGTH OF MASONRY UNITS IS 1900 PSI PER IBC TABLE 2105.2.2.1.2 FOR TYPE M OR S MORTAR. SUBMITTALS SHALL BE REVIEWED AND APPROVED PRIOR TO MASONRY CONSTRUCTION STARTING.
16. SUBMIT MIX DESIGN OF CORE FILL CONCRETE AND BOND BEAM FILL CONCRETE TO ENGINEER/ARCHITECT FOR APPROVAL PRIOR TO PLACING ANY CONCRETE.
17. FILL CMU LINTELS SOLID WITH 3,000 PSI CONCRETE (3/8" MAXIMUM AGGREGATE).

STEEL FRAMING

1. LATEST AISC MANUAL AND SPECIFICATIONS APPLY.
2. WELDING ELECTRODES SHALL BE 70XX, UNO.
3. ALL WELDING AND TESTING OF WELDS SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY CODES AND RECOMMENDATIONS.
4. ALL WELDING SHALL BE BY WELDERS HOLDING VALID CERTIFICATES IN THE TYPE OF WELD REQUIRED.
5. STRUCTURAL STEEL FRAMING SHALL BE TRUE AND PLUMB BEFORE CONNECTIONS ARE FINAL BOLTED OR WELDED.

OPEN WEB STEEL JOISTS

1. DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STEEL JOIST INSTITUTE SPECIFICATIONS.
2. MANUFACTURER SHALL BE SJI APPROVED FOR THE TYPE OF JOIST BEING USED.
3. STEEL JOISTS SHALL BE DESIGNED FOR A DEAD LOAD (EXCLUDING WEIGHT OF JOISTS) OF 25 PSF AND LIVE LOAD AS STATED UNDER DESIGN LOADS.
4. NO DRILLED HOLES OR CUTS ARE PERMITTED IN JOIST MEMBERS.
5. ALL CONCENTRATED LOADS SHALL BE APPLIED AT A JOIST PANEL POINT UNLESS THE JOIST CHORDS ARE SPECIFICALLY DESIGNED FOR CONCENTRATED LOADS. (REF DETAIL C5/S501)
6. BRIDGING SHALL BE HORIZONTAL OR DIAGONAL PER SJI SPECIFICATIONS.
7. DESIGN ROOF JOISTS FOR NET UPLIFT OF 15 PSF.

STEEL ROOF DECK

1. STEEL DECK INSTITUTE SPECIFICATIONS AND RECOMMENDATIONS APPLY.
2. ROOF DECK SHALL BE 1–1/2", 22 GA PAINTED WIDE RIB DECK, UNO.
3. DECK SHALL BE ERECTED AND WELDED TO SUPPORTING STEEL WITH 5/8" DIAMETER PUDDLE WELD WITH 36/4 WELD PATTERN (UNO) AND HAVE SIDE LAPS CONNECTED WITH NO. 10 TEK SCREWS AT MIDSPAN, UNO.
4. LAP ENDS A MINIMUM OF 2" WITH THE CENTERS OF THE LAPS LOCATED AT THE CENTERS OF THE SUPPORTS.
5. DECKING MUST BE CONTINUOUS OVER THREE SUPPORTS.

SPECIAL INSPECTION
IBC REQUIREMENTS

THE FOLLOWING WORK ITEMS REQUIRE SPECIAL INSPECTION PER IBC SECTION 1701 AND 1704. THE SPECIAL INSPECTION AND THE COST ASSOCIATED THEREWITH WILL BE PAID BY THE OWNER. THE ITEMS THAT REQUIRE SPECIAL INSPECTIONS ARE:

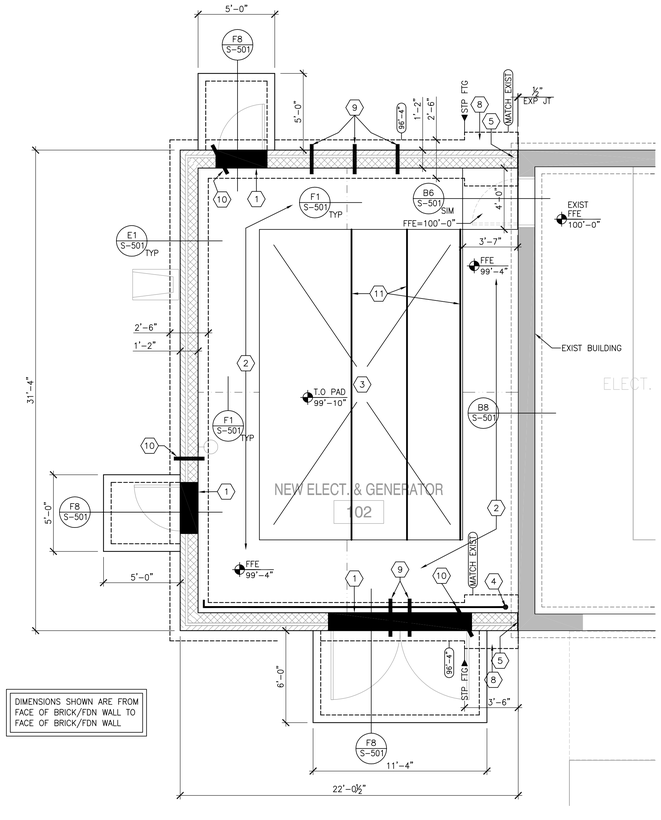
A. 1704.4 CONCRETE CONSTRUCTION – REF TABLE 1704.4 FOR REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION
B. 1704.5 MASONRY CONSTRUCTION – REF TABLE 1704.5.1 FOR REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION.

SHEET KEYNOTES

1. RECESS TOP OF FOUNDATION WALL 8" AND CARRY SLAB OVER THE TOP AT ALL SOLID HATCHED LOCATIONS.
2. 4" CONCRETE SLAB–ON–GRADE W/ #4 BARS @ 16" OC EACH WAY ATOP VAPOR RETARDER ATOP MINIMUM 6" COMPACTED DRAINAGE FILL.
3. 6" CONCRETE EQUIPMENT PAD. COORDINATE W/ ELECTRICAL FOR EXACT SIZE AND LOCATION. CHAMFER EDGES ALL AROUND. REF. DETAIL B5/S–501.
4. #5 REBAR FOR ELECTRICAL GROUND EXTENDING 20'–0" ALONG FDN AND FTG REINF. EXTEND REBAR GROUND OUT OF SLAB A MIN. OF 8" AND A MIN. 2" OUT FROM FOUNDATION WALL. REFER TO DETAIL C1/S–501 AND ELECTRICAL DRAWINGS FOR EXACT LOCATION AND OTHER REQUIREMENTS.
5. DOWEL NEW FOUNDATION WALL/FOOTINGS TO EXISTING FOUNDATION WALL/FOOTINGS PER DETAIL F6/S–501.
6. 1 ½", 22 GA, WIDE–RIBBED STEEL ROOF DECK. FASTEN DECK W/ 5/8" DIA. PUDDLE WELDS IN A 36/4 WELD PATTERN & (3) SIDELAP FASTENERS PER SPAN.
7. PROVIDE (1) #5 VERTICAL BAR BELOW BEAM BEARING AND GROUT CORE FULL HEIGHT. SEE GENERAL NOTES AND DETAIL E6/S–501 FOR ADDITIONAL BEARING INFORMATION.
8. 3'–6"X3'–6"X1'–0" SQUARE FOOTING BELOW BEAM BEARING AT THIS LOCATION. BOTTOM OF FOOTING TO MATCH EXISTING BOTTOM OF FOOTING. REINFORCE W/ 4–#5 EA WAY BOTTOM.
9. NEW CONDUIT THRU FOUNDATION WALL AT THIS LOCATION. REFERENCE DETAIL F5/S–501 FOR TYPICAL UTILITY SLEEVE DETAIL. COORDINATE W/ ELECTRICAL DRAWINGS FOR CONDUIT SIZE AND EXACT LOCATION.
10. EXISTING CONDUIT – EXACT LOCATION TO BE FIELD VERIFIED. POUR NEW FOUNDATION WALL AROUND EXISTING CONDUIT. PROVIDE UTILITY SLEEVE IN FOUNDATION WALL PER DETAIL F5/S–501.
11. PROVIDE STEEL CHANNEL EMBEDDED IN CONCRETE EQUIPMENT PAD PER EQUIPMENT MANUFACTURER'S RECOMMENDATION FOR ANCHORING THE SWITCHGEAR. COORDINATE WITH ELECTRICAL.
12. PROVIDE EQUIPMENT SUPPORT FOR 400# TRANSFORMER AT THIS LOCATION FROM STRUCTURE ABOVE. REFERENCE DETAIL B3/S–501. COORDINATE EXACT SIZE AND LOCATION WITH ELECTRICAL DRAWINGS AND CONTRACTOR.

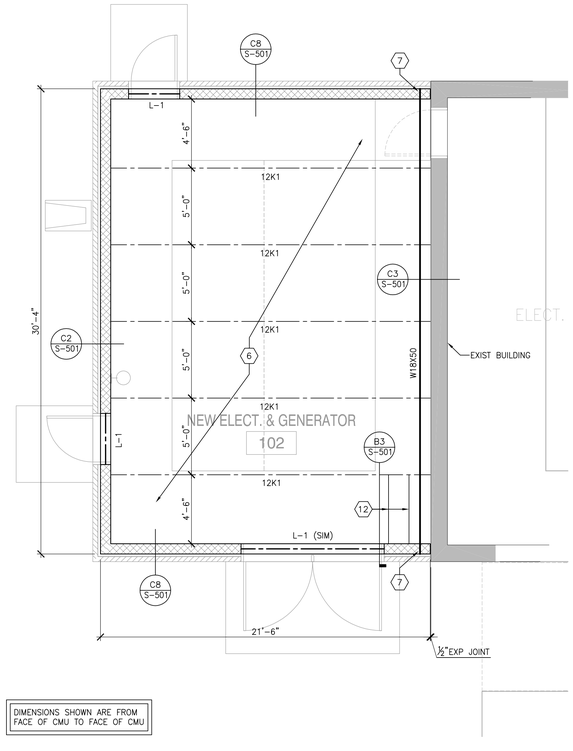
SHEET GENERAL NOTES

A. EXTERIOR WALL CONSISTS OF 8" CONCRETE MASONRY UNITS – REFERENCE GENERAL NOTES FOR TYPICAL MASONRY WALL REINFORCEMENT
B. T.O. CONC ELEVATION (FFE) = 99'–4"
C. T.O. STL BEAM/JOIST BRG ELEVATION = 110'–0"
D. REFERENCE ARCHITECTURAL FOR ROOFING MATERIALS, INTERIOR DIMENSIONS, EXTERIOR CONTROL JOINTS AND ADDITIONAL INFORMATION.
E. COORDINATE WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL FOR ADDITIONAL INFORMATION
F. REFERENCE SHEET S–501 FOR MASONRY LINTEL SCHEDULE, THE EXTERIOR NON BEARING BRICK/CMU ANGLE SCHEDULE AND STANDARD MASONRY DETAILS
G. BRICK LEDGE ELEVATION = 98'–8"
H. REFERENCE DETAIL C6/S–501 FOR TYPICAL ROOF DECK FASTENER PATTERN. COORDINATE WITH PLAN.



PLAN NORTH

F4 FOOTING & FOUNDATION PLAN
SCALE: 1/4"=1'–0"



PLAN NORTH

F7 ROOF FRAMING PLAN
SCALE: 1/4"=1'–0"

FINAL CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER – REG. NO. 5893 – MARK E. MELSON – SOUTH DAKOTA
DATE: 4/17/2013

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.
TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: STRUCTURAL GENERAL NOTES, FOOTING AND FOUNDATION PLAN AND ROOF FRAMING PLAN

Approved Project Director:

Project Title: Upgrade Campus Electrical Service
Project Number: 438-13-121
Building Numbers: 5 AND 27
Location: Sioux Falls, South Dakota
Drawing Number: S-101
Date: 04/17/2013
Checked: MEL
Drawn: TDB
Dwg. 4 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

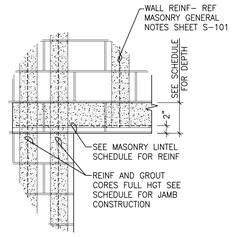
VA FORM 08–6231

MASONRY LINTEL SCHEDULE

MARK	DESCRIPTION	DETAIL	REMARKS
L1	8" DEEP LINTEL– REINF W/2–#5 (REINF W/ 2–#7 AT SIM)	2" 8"	GROUT SOLID & 8" BRG EA END– REF DIAGRAM PROVIDE FULL HGT JAMBS EA SIDE W/ (2) FULLY GROUTED CORES W/ (1) #5 PER CORE

ADDITIONAL REMARKS:

1. PROVIDE MIN 8" BEARING AT ALL MASONRY BEAMS– UNO
2. EXTEND CMU LINTEL REINF PAST OPENING THROUGH ALL GROUT FILLED CORES OF JAMBS
3. WHERE MASONRY BEAM SPANS 2 OPENINGS DO NOT BEAR AT INTERMEDIATE MASONRY, UNO– PROVIDE CAULK JT BETWEEN MASONRY AND LINTEL
4. REF GENERAL STRUCTURAL NOTES ON SHEET S–101 FOR TYPICAL LINTELS FOR MECHANICAL, ELECTRICAL, AND OTHER OPENINGS NOT SHOWN. COORDINATE OPENING SIZES AND LOCATIONS WITH MECHANICAL, ELECTRICAL, AND ARCHITECTURAL
5. GROUT MASONRY LINTELS FULL

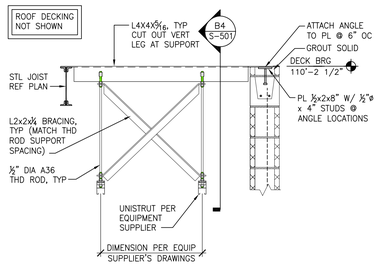


EXT NON-BRG BRICK/CMU ANGLE SCHEDULE

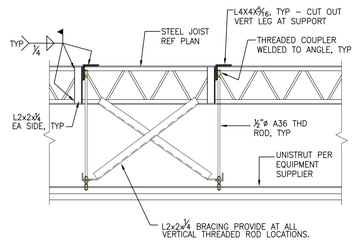
SPAN	STEEL ANGLE	REMARKS
6'–0" AND SMALLER	L4x4x1/4	
6'–1" TO 8'–0"	L6x4x3/8	

ADDITIONAL REMARKS:

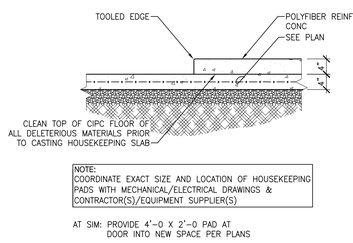
1. ALL LINTELS TO BEARING A MINIMUM OF 8" ON SOLID MASONRY.
2. REFERENCE DETAIL E8/S–501 FOR BEARING CONDITIONS AT CONTROL JOINTS. REFERENCE ARCH FOR CONTROL JOINT LOCATIONS.
3. GALVANIZE ALL EXTERIOR LINTELS.



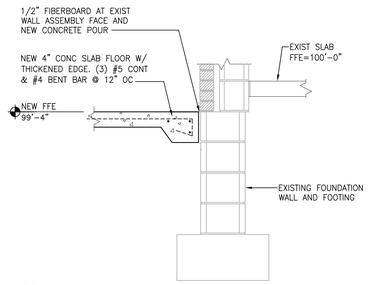
B3 TYPICAL EQUIP SUPPORT DETAIL
SCALE: 3/4" = 1'–0"



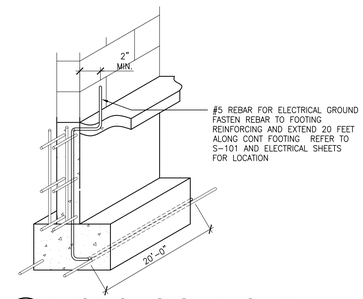
B5 TYPICAL EQUIP SUPPORT DETAIL
SCALE: 3/4" = 1'–0"



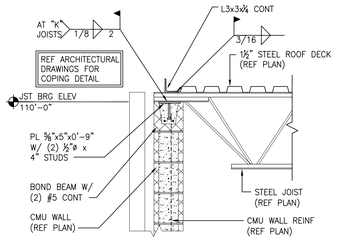
B6 CONCRETE EQUIPMENT PAD
SCALE: 3/4" = 1'–0"



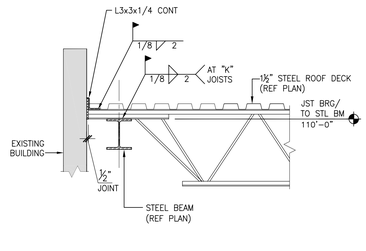
B8 NEW SLAB MEETS EXIST FDN DETAIL
SCALE: 3/4" = 1'–0"



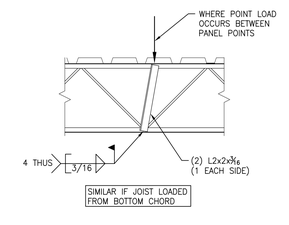
C1 ELECTRICAL GROUNDING DETAIL
SCALE: 3/4" = 1'–0"



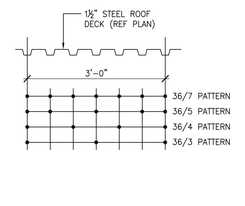
C2 TYP EXTERIOR JOIST BEARING DETAIL
SCALE: 3/4" = 1'–0"



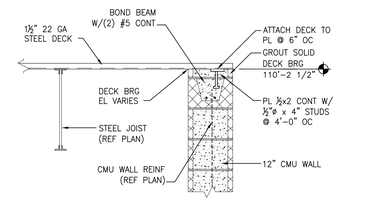
C3 TYPICAL JOIST EXTENSION DETAIL
SCALE: 3/4" = 1'–0"



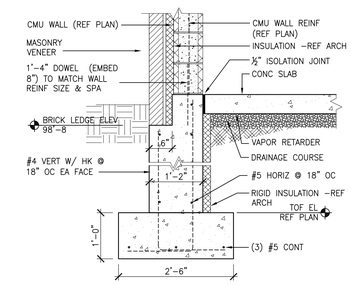
C5 TYPICAL JOIST REINFORCEMENT
SCALE: 3/4" = 1'–0"



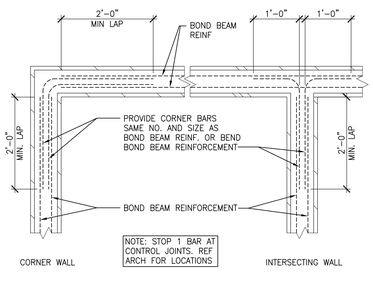
C6 TYPICAL ROOF DECK FASTENER PATTERN DETAIL
SCALE: 3/4" = 1'–0"



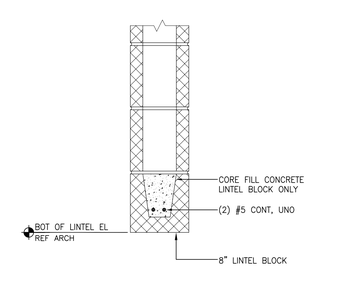
C8 DECK BEARING DETAIL
SCALE: 3/4" = 1'–0"



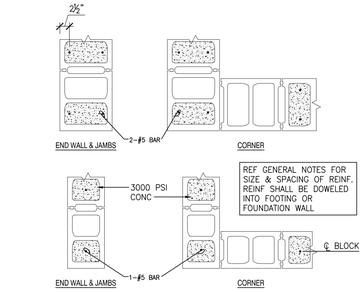
E1 EXTERIOR FOUNDATION DETAIL
SCALE: 3/4" = 1'–0"



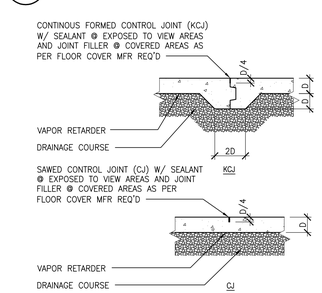
E2 TYPICAL BOND BEAM REINF LAYOUT (STD MASONRY DETAIL)
SCALE: 3/4" = 1'–0"



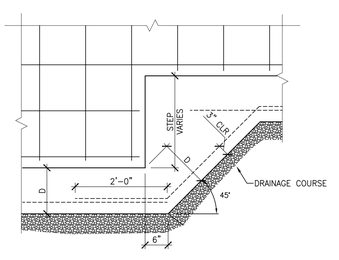
E3 TYPICAL 8" DEEP LINTEL BLOCK (STD MASONRY DETAIL)
SCALE: 3/4" = 1'–0"



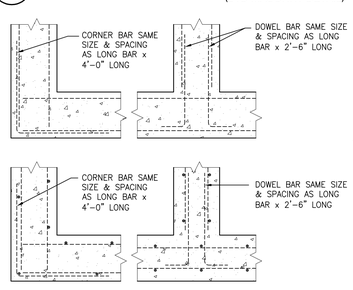
E8 TYPICAL BRICK ANGLE BEARING @ CONTROL JOINT
SCALE: 3/4" = 1'–0"



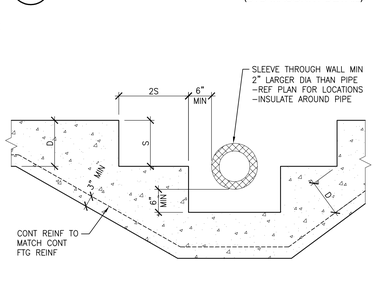
F1 TYP CONTROL/ CONSTRUCTION JOINT
SCALE: 3/4" = 1'–0"



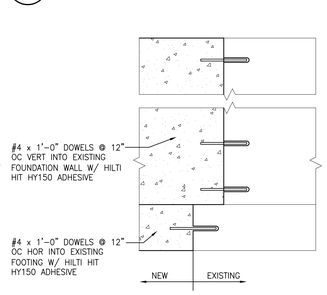
F2 TYP FOOTING STEP - CONC WALL
SCALE: NONE



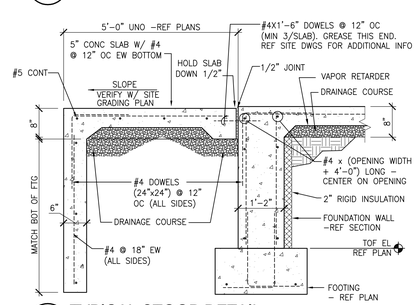
F3 TYPICAL WALL CORNER DETAILS
SCALE: 3/4" = 1'–0"



F5 TYPICAL UTILITY THRU WALL
SCALE: 3/4" = 1'–0"



F6 FOUNDATION DOWEL DETAIL
SCALE: 3/4" = 1'–0"



F8 TYPICAL STOOP DETAIL
SCALE: 3/4" = 1'–0"

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5893
MARK E. LARSON
NORTH DAKOTA
DATE: 4/17/2013

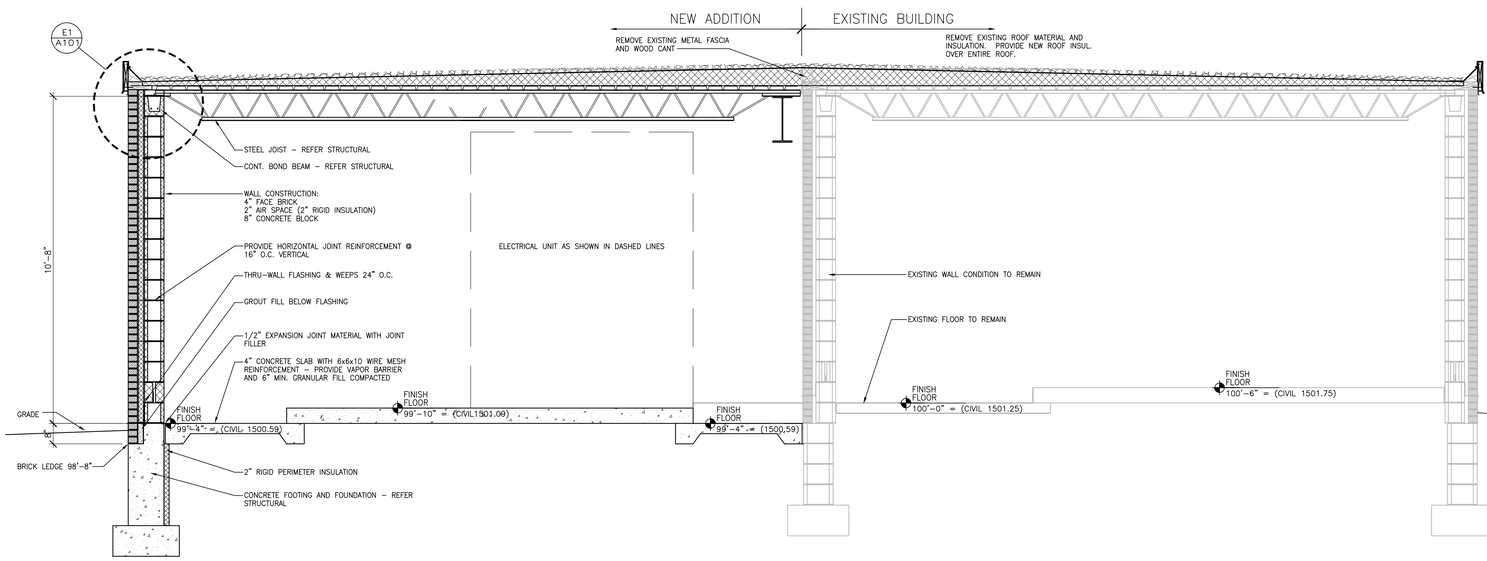
ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.
TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #54121073 - PRIORITY 2

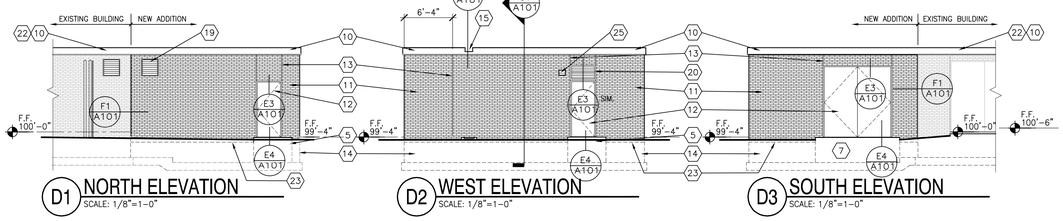
Drawing Title	STRUCTURAL SCHEDULES AND DETAILS
Approved Project Director	
Project Title	Upgrade Campus Electrical Service
Location	Sioux Falls, South Dakota
Date	04/17/2013
Checked	MEL
Drawn	TDB
Project Number	438-13-121
Building Numbers	5 AND 27
Drawing Number	S-501
	Dwg 5 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08–6231



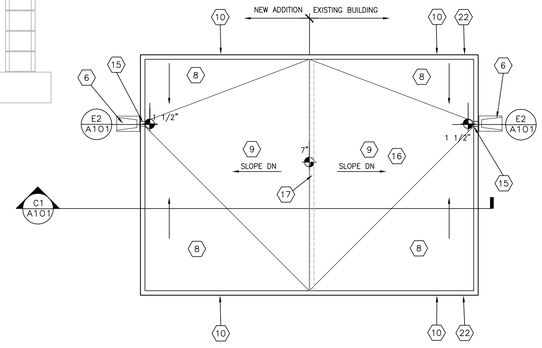
C1 BUILDING CROSS SECTION
SCALE: 1/2"=1'-0"



D1 NORTH ELEVATION
SCALE: 1/8"=1'-0"

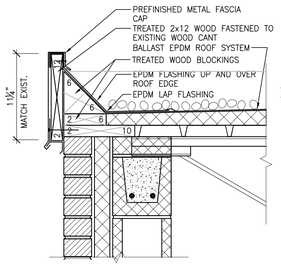
D2 WEST ELEVATION
SCALE: 1/8"=1'-0"

D3 SOUTH ELEVATION
SCALE: 1/8"=1'-0"

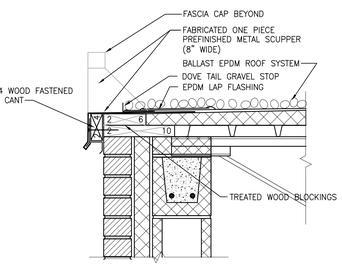


PLAN NORTH

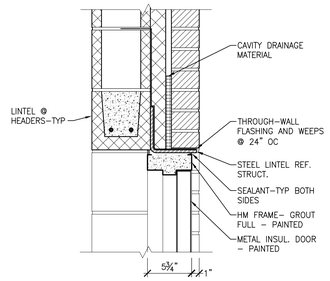
D7 ROOF PLAN
SCALE: 1/8"=1'-0"



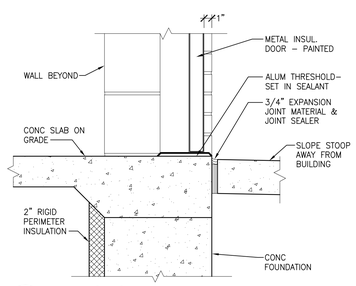
E1 ROOF EDGE/COPING DETAIL
SCALE: 1 1/2"=1'-0"



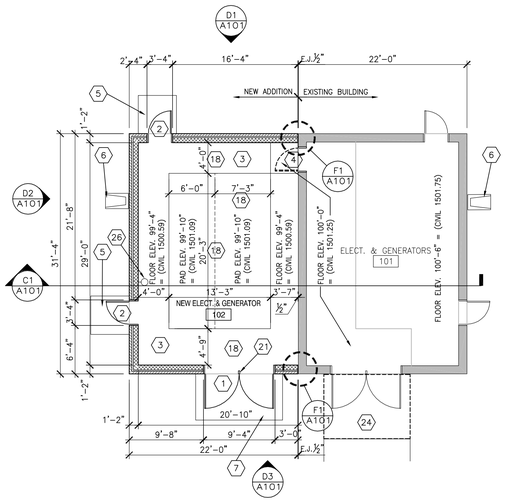
E2 SCUPPER - ROOF SIDE
SCALE: 1 1/2"=1'-0"



E3 HEAD DETAIL
SCALE: 1 1/2" = 1'-0"

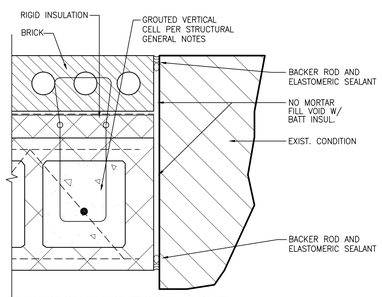


E4 THRESHOLD DETAIL
SCALE: 1 1/2" = 1'-0"



PLAN NORTH

F7 FLOOR PLAN
SCALE: 1/8"=1'-0"



F1 MASONRY CONTROL JOINT
SCALE: 3" = 1'-0"

SHEET KEYNOTES

1. 2 – 4'–6"W. x 9'–2"H. INSULATED METAL DOOR AND FRAME. PAINTED. WEATHER STRIPPED AND SET THRESHOLD IN BED OF SEALANT. SEE SPEC. FOR HARDWARE GROUP #1.
2. 3'–0"W. x 7'–2"H. INSULATED METAL DOOR AND FRAME. PAINTED. WEATHER STRIPPED AND SET THRESHOLD IN BED OF SEALANT. SEE SPEC. FOR HARDWARE GROUP #2.
3. CONCRETE FLOOR, EXPOSED CONCRETE BLOCK AND EXPOSED ROOF DECK AND JOISTS.
4. REMOVE EXISTING METAL DOOR. EXISTING METAL DOOR FRAME AND THRESHOLD TO REMAIN.
5. (5'–0" x 5'–0") CONCRETE STOOP – REF. STRUCTURAL.
6. 2'–0" x 3'–0" x 4" CONCRETE SPLASHBLOCK.
7. (6'–0" x 11'–4") CONCRETE STOOP – REF. STRUCTURAL.
8. CRICKET.
9. BALLAST EPDM ROOF SYSTEM – SLOPE 1/4"/12" TO SCUPPER.
10. NEW PREFINISHED METAL FASCIA CAP.
11. FACE BRICK TO MATCH COLOR AND PATTERN WITH EXISTING.
12. INSULATED METAL DOOR AND FRAME.
13. CONTROL JOINT. BACKER ROD AND SEALANT.
14. CONCRETE FOOTING AND FOUNDATION. REFER STRUCTURAL.
15. PREFINISHED METAL SCUPPER.
16. REMOVE EXISTING ROOF MATERIALS AND INSULATION DOWN TO METAL DECK.
17. REMOVE EXISTING METAL FASCIA AND WOOD CANT.
18. COORDINATE CONC. PAD AND LOCATION WITH ELECTRICAL EQUIPMENT.
19. 24" x 24" LOUVER W/ HOOD – REF. MECHANICAL.
20. 40"W x 24"H. LOUVER – REF MECHANICAL.
21. HOLLOW METAL REMOVABLE MULLION 2" WIDE.
22. REMOVE EXISTING METAL FASCIA. EXISTING WOOD CANT TO REMAIN.
23. BRICK LEDGE 98'–8".
24. REMOVE EXISTING PORTION OF CONCRETE DRIVEWAY AS SHOWN IN DASHED LINES AND REPLACE WITH NEW CONCRETE DRIVEWAY TO MATCH EXISTING. COORDINATE WITH CIVIL AND ELECTRICAL.
25. LIGHT FIXTURE REF ELECTRICAL.
26. WALL MOUNTED BRACKET AND FIRE EXT.

FINAL CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ARCHITECT
REG. NO 10003
JARED P. BOSLE
NORTH DAKOTA
DATE: 4 / 17/2013

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104

phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: FLOOR AND ROOF PLANS, EXTERIOR ELEVATIONS, SECTION AND DETAILS

Approved: Project Director

Project Title: Upgrade Campus Electrical Service

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JNB

Project Number: 438-13-121

Building Numbers: 5 AND 27

Drawing Number: A-101

Dwg. 6 of 14

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

ELECTRIC UNIT HEATER SCHEDULE

MECHANICAL REQUIREMENTS												ELECTRICAL REQUIREMENTS											
															STARTER							DISCONNECT	
UNIT NO.	LOCATION	MANUFACTURER & MODEL#	KW INPUT	MBH OUTPUT @ 208V	STAGES	BLOWER CFM	MOTOR HP	MOTOR RPM	HORIZ. THROW FT	ARRANGEMENT	MECH REMARKS	VOLT/PH	MIN. CKT. AMP	WIRE SIZE	TYPE	SIZE	LOCATION	CNTRL. DVC.	AUX.	BY	CONTROL	TYPE	BY	ELEC REMARKS
EUH-1	102	TRANE UHEC	3.3	11.1	1	400	1/125	1550	12	HORIZ. DISHCHARGE	ALL	277/1	11.2	#12	NA	–	–	TSTAT	–	DIV 23	TCC	INTEGRAL	DIV 23	E1
EUH-2	102	TRANE UHEC	3.3	11.1	1	400	1/125	1550	12	HORIZ. DISHCHARGE	ALL	277/1	11.2	#12	NA	–	–	TSTAT	–	DIV 23	TCC	INTEGRAL	DIV 23	E1

MECH REMARKS:
1. PROVIDE UNIT WITH DISCONNECT SWITCH.
2. DDC CONTROLS BY TEMP CONTROL CONTRACTOR.

ELEC REMARKS:
E1. PROVIDE A SINGLE POINT CONNECTION TO EUH FACTORY INSTALLED DISCONNECT.

EXHAUST FAN SCHEDULE

MECHANICAL REQUIREMENTS											ELECTRICAL REQUIREMENTS											
				TOTAL	FAN								MIN. CKT.	STARTER							DISCONNECT		
UNIT NO.	LOCATION	MANUFACTURER & MODEL NO.	CFM	H2O	SIZE	SONES	RPM	BHP	HP	Remarks	VOLTAGE	PHASE	AMP	TYPE	SIZE	LOCATION	CNTRL. DVC.	AUX.	BY	CONTROL	TYPE	BY	REMARKS
EF-1	102	GREENHNECK SE2-16-A3	2200	0.250	16"	19.0	1750	0.33	0.33	ALL	120	1	7.2	MMS	1HP	AT FAN	TSTAT	NA	DIV 16	TCC	INTEGRAL W/ STARTER	DIV 23	E1

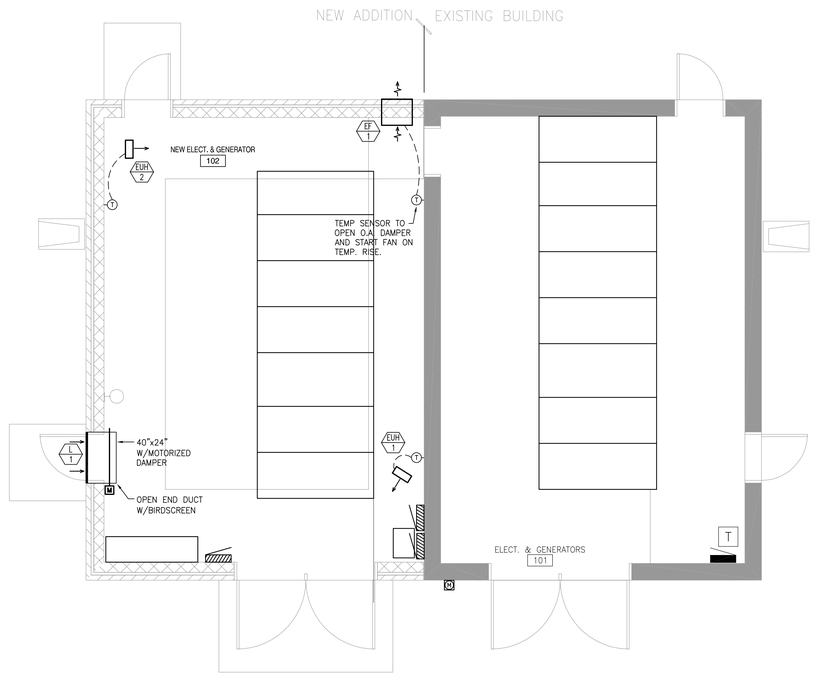
REMARKS:
1. PACKAGED DIRECT DRIVE WALL FAN WITH WALL COLLAR, OSHA GUARD, HEAVY DUTY EXHAUST SHUTTER AND WEATHERHOOD.
2. PROVIDE "VARIGREEN" ECM MOTOR.
3. HD WELDED AND GUSSETTED PAINTED STEEL PROPELLER.

ELECTRICAL NOTES:
E1. PROVIDE CONNECTION TO MANUAL MOTOR STARTER. PROVIDE CONNECTION BETWEEN MMS AND EF-1 CONNECTION POINT.

LOUVER SCHEDULE

MECHANICAL REQUIREMENTS											
				MAX			FREE				
DESIG	LOCATION	MANUFACT. DESIG.	*CFM	APD IN W.G.	SIZE WIDTH	SIZE HEIGHT	AREA SF	FRAME STYLE	CONST.	FINISH	ACCESSORIES	REMARKS
L-1	102	RUSKIN ELF-375DX	2,200	0.07	40	24	3.32	EXTENDED SILL	ALUM	COLOR BY ARCH.	BIRSCREEN	--

*ALL LOUVERS SHALL BE AMCA CERTIFIED FOR ALL PERFORMANCE AND WATER PENETRATION.
MAX. WATER PENETRATION SHALL BE LESS THAN .01 OZ./SQ.FT. FREE AREA FOR INTAKE LOUVERS.



NOTE:
ALL NEW TEMPERATURE CONTROLS SHALL BE CONNECTED TO THE CAMPUS EXISTING JOHNSON CONTROLS BUILDING AUTOMATION SYSTEM. PROVIDE 1" CONDUIT FROM BLDG 27 TO DDC PANEL IN BLDG 50. SEE SHEET ES101 COORDINATE WORK WITH E.C.

F1 MECHANICAL PLAN - PHASE II
SCALE: 1/4"=1'-0"

FINAL CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6888
RICHARD C. NIKOLAS
SOUTH DAKOTA
DATE: 04/17/13

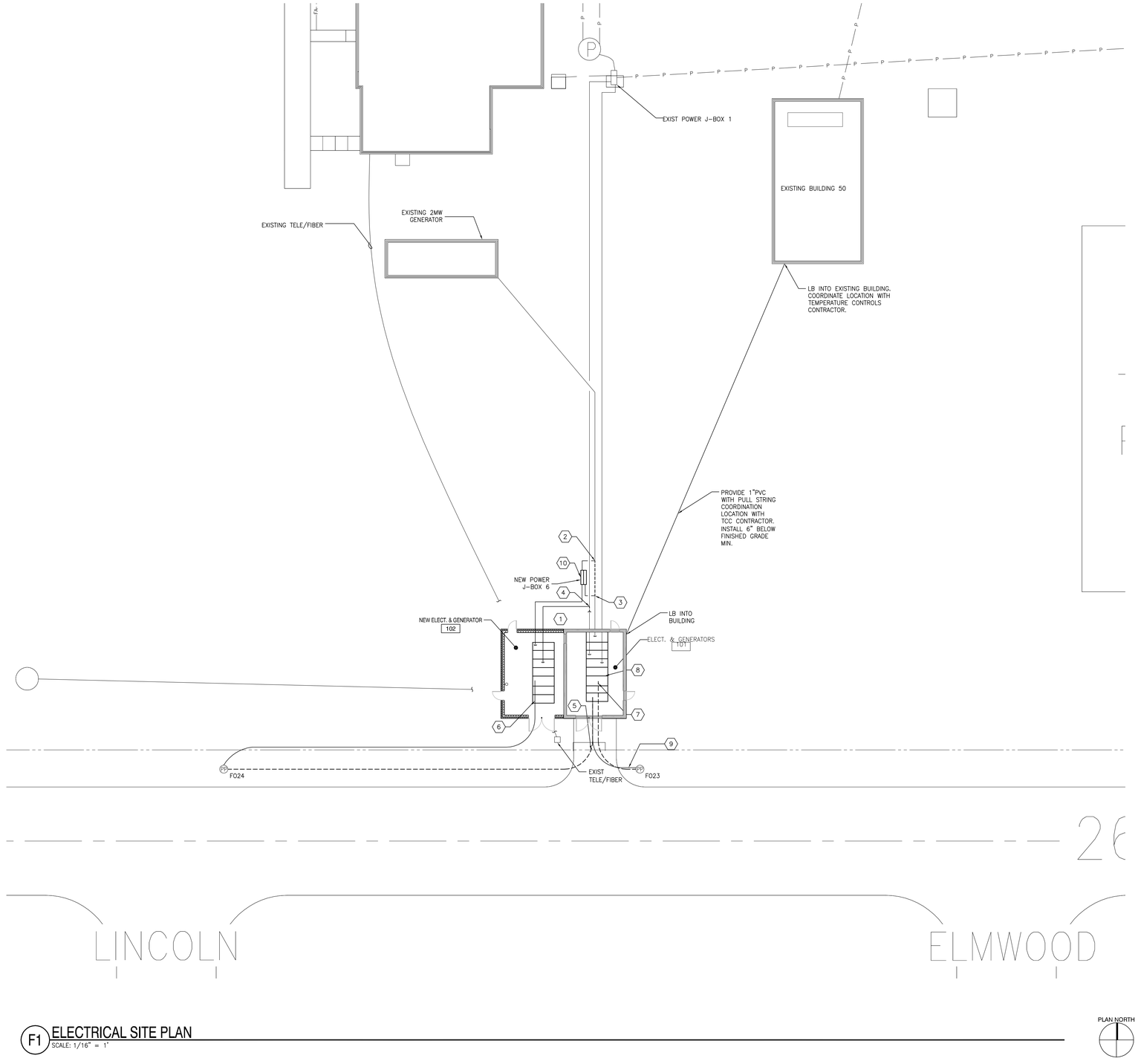
ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.
TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: MECHANICAL PLAN AND SCHEDULES
Approved Project Director:
Project Title: Upgrade Campus Electrical Service
Location: Sioux Falls, South Dakota
Date: 04/17/2013
Checked: RCN
Drawn: JHL
Project Number: 438-13-121
Building Numbers: 5 AND 27
Drawing Number: ME101
Dwg. 7 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



F1 ELECTRICAL SITE PLAN
SCALE: 1/16" = 1'

SHEET GENERAL NOTES

A. SEE SHEET E-102 AND E-602 FOR PHASING PLAN.

SHEET KEYNOTES

1. EXISTING LAWN SPRINKLER SYSTEM SHALL BE RELOCATED AND MODIFIED AS REQUIRED FOR BUILDING ADDITION.
2. INTERCEPT CONDUIT THAT FEEDS EXISTING 2MW GENERATOR. EXTEND CONDUIT TO NEW POWER J-BOX #6. EXISTING GENERATOR SHALL BE FED FROM 15KV SWGR 102 VIA POWER J-BOX #6. SEE SHEET E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
3. INTERCEPT CONDUIT THAT FEEDS EXISTING 2MW GENERATOR. EXTEND CONDUIT TO NEW POWER J-BOX #6. SEE SHEET E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
4. INTERCEPT CONDUIT THAT FEEDS EXISTING POWER J-BOX #1. EXTEND CONDUIT TO 15KV SWGR 102. SEE SHEET E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
5. UTILITY SHALL DISCONNECT 15KV F024 FEEDER FROM EXISTING 15KV SWGR, REMOVE CABLE BACK TO EXISTING UTILITY POLE, AND DISCONNECT FROM UTILITY SWITCHES. EXISTING CONDUIT THAT ENTERS BUILDING 27 SHALL REMAIN FOR REUSE. SEE SHEET E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
6. UTILITY SHALL PROVIDE A NEW 15KV CABLE FROM EXISTING UTILITY POLE F024 TO NEW 15KV SWGR 102. SEE SHEET E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
7. UTILITY SHALL DISCONNECT 15KV F023 FEEDER FROM EXISTING 15KV SWGR, REMOVE CABLE BACK TO EXISTING UTILITY POLE, AND DISCONNECT FROM UTILITY SWITCHES. EXISTING CONDUIT THAT ENTERS BUILDING 27 SHALL BE CAPPED AND LABELED FOR FUTURE USE.
8. REPLACE EXISTING 15KV SWGR. SEE E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
9. UTILITY SHALL PROVIDE A NEW 15KV CABLE FROM EXISTING UTILITY POLE F023 TO NEW 15KV SWGR 101. CABLE SHALL ENTER BUILDING VIA EXISTING CONDUIT AS SHOWN. SEE SHEET E-102, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
10. COORDINATE EXACT LOCATION OF POWER J-BOX 6 WITH VA DURING CONSTRUCTION.

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER — REG. NO. 6729 — DARRELL L. BREN — DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.
TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: ELECTRICAL SITE PLAN - BUILDING 27

Approved Project Director:

Project Title: Upgrade Campus Electrical Service

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JWN

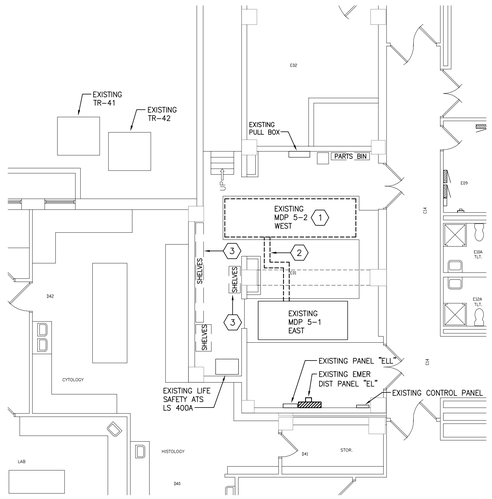
Project Number: 438-13-121

Building Numbers: 5 AND 27

Drawing Number: ES101 Dwg. 8 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

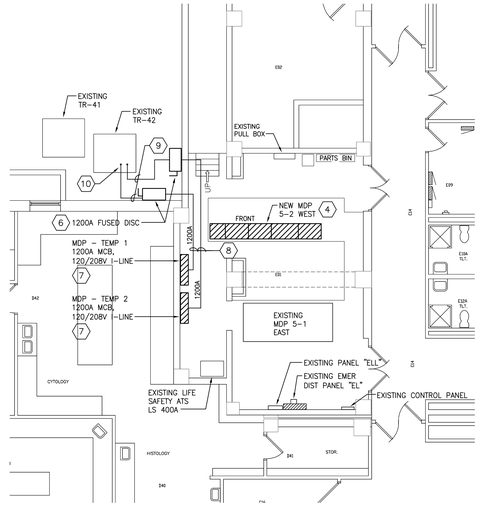
VA FORM 08-6231



C1 BUILDING 5-1 GROUND LEVEL SWBD 5-2 ELECTRICAL DEMOLITION PLAN

SCALE: 1/8"=1'-0"

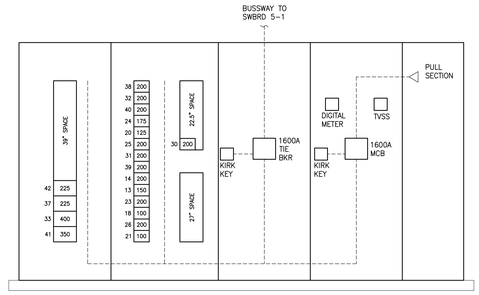
PLAN NORTH



C3 BUILDING 5-1 GROUND LEVEL SWBD 5-2 ELECTRICAL PLAN

SCALE: 1/8"=1'-0"

PLAN NORTH



C6 NEW SWITCHBOARD 5-2 - ELEVATION

SCALE: NONE

PANEL TAG: SWBD 5-2 (WEST) VOLTAGE: 120/208 VOLTS, 3-PHASE, 4-WIRE
MOUNTING: FLOOR MAIN BUS RATING AMPS: 1600
PANEL TYPE: SWITCHBOARD MIN A.I.C.: 65k (A)

	CKT	ITEM OR AREA SERVED	DIST KVA	CIRCUIT BREAKER FRAME SIZE	# POLES	TRIP SETTING	REMARKS
	MAIN		0.0	1600	3	1600	
SECTION 1	1	TIE BREAKER	0.0	1600	3	1600	
SECTION 2	2	#30 – PANELS CC, DD, EE	0.0	200	3	200	
SECTION 3	3	#38 – PANELS M, N, O	0.0	200	3	200	
	4	#32 – PANELS JW, K	0.0	200	3	200	
	5	#40 – PANELS I, JJ	0.0	200	3	200	
	6	#24 – PANEL E	0.0	200	3	175	
	7	#20 – PANEL G	0.0	200	3	125	
	8	#25 – DIST PANEL GH	0.0	200	3	200	
	9	#31 – PANEL II	0.0	200	3	200	
	10	#39 – PANEL SL	0.0	200	3	200	
	11	#14 – PANEL F	0.0	200	3	200	
	12	#13 – PANELS A, B	0.0	200	3	150	
	13	#23 – PANELS D, D1	0.0	200	3	200	
	14	#18 – PANEL H	0.0	200	3	100	
(27" & 22.5" SPACE)	15	#26 – PANELS SE, N1-B6	0.0	200	3	200	
	16	#21 – PANEL C	0.0	200	3	100	
SECTION 4	17	#42 – PANEL L1	0.0	400	3	225	
	18	#37 – PANELS S, S1, V	0.0	400	3	225	
	19	#33 – DIST. PANEL P	0.0	400	3	400	
(39" SPACE)	20	#41 – ATS LS	0.0	400	3	350	

TOTAL CONNECTED LOAD (KVA) 0.0

TOTAL DEMAND LOAD (KVA) 0.0 *PROVIDE KIRK-KEY INTERLOCK ON MAIN CB & TIE BREAKER.
*PROVIDE WITH TVSS PROTECTION. SEE SPEC 264313.

FEEDER AMPERES DEMAND 0.0

PANEL TAG: MDP-TEMP 1 VOLTAGE: 120/208 VOLTS, 3-PHASE, 4-WIRE
MOUNTING: WALL MAIN BUS RATING AMPS: 1200
PANEL TYPE: DISTRIBUTION MIN A.I.C.: 65k (A)

CKT	ITEM OR AREA SERVED	DIST KVA	CIRCUIT BREAKER FRAME SIZE	# POLES	TRIP SETTING	REMARKS
MAIN		0.0	1200	3	1200	(ADJUSTABLE TO 1000A)
1	(SPARE)	0.0	600	3	600	
2	(SPARE)	0.0	400	3	400	
3	#41 – ATS LS	0.0	400	3	350	
4	#42 – PANEL L1	0.0	400	3	225	
5	#30 – PANELS CC, DD, EE	0.0	200	3	200	
6	#38 – PANELS M, N, O	0.0	200	3	200	
7	#32 – PANELS J, W, K	0.0	200	3	200	
8	#40 – PANELS I, JJ	0.0	200	3	200	
9	#25 – DIST PANEL GH	0.0	200	3	200	
10	#31 – PANEL II	0.0	200	3	200	
11	#13 – PANELS A, B	0.0	200	3	150	
12	(SPARE)	0.0	200	3	150	
13	#20 – PANEL G	0.0	200	3	125	
14	(SPARE)	0.0	200	3	30	

TOTAL CONNECTED LOAD (KVA) 0.0

TOTAL DEMAND LOAD (KVA) 0.0 *PROVIDE WITH TVSS PROTECTION. SEE SPEC 264313.

FEEDER AMPERES DEMAND 0.0

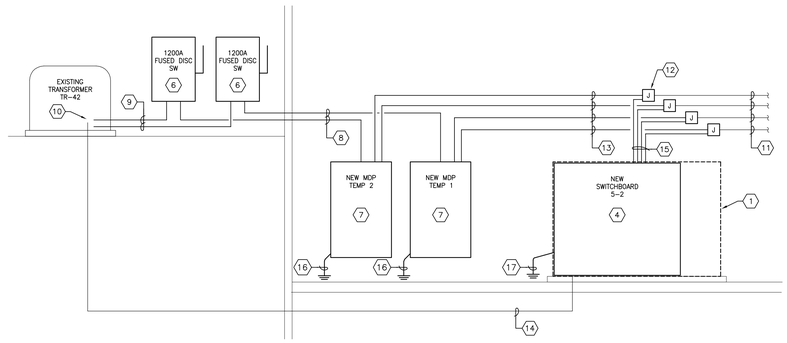
PANEL TAG: MDP – TEMP 2 VOLTAGE: 120/208 VOLTS, 3-PHASE, 4-WIRE
MOUNTING: WALL MAIN BUS RATING AMPS: 1200
PANEL TYPE: DISTRIBUTION MIN A.I.C.: 65k (A)

CKT	ITEM OR AREA SERVED	DIST KVA	CIRCUIT BREAKER FRAME SIZE	# POLES	TRIP SETTING	REMARKS
MAIN		0.0	1200	3	1200	
1	(SPARE)	0.0	600	3	600	
2	#33 – DIST PANEL P	0.0	400	3	400	
3	(SPARE)	0.0	400	3	400	
4	#37 – PANELS S, S1, V	0.0	400	3	225	
5	#39 – PANEL SL	0.0	200	3	200	
6	#14 – PANEL F	0.0	200	3	200	
7	#23 – PANELS D, D1	0.0	200	3	200	
8	#26 – PANELS SE, N1-B10	0.0	200	3	200	
9	#24 – PANEL E	0.0	200	3	175	
10	#18 – PANEL HI	0.0	200	3	100	
11	#21 – PANEL C	0.0	200	3	100	

TOTAL CONNECTED LOAD (KVA) 0.0

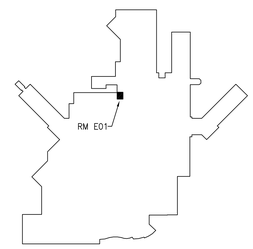
TOTAL DEMAND LOAD (KVA) 0.0 *PROVIDE WITH TVSS PROTECTION. SEE SPEC 264313.

FEEDER AMPERES DEMAND 0.0



E5 PARTIAL DISTRIBUTION RISER DIAGRAM

SCALE: NONE



GROUND FLOOR KEY PLAN

SCALE: NO SCALE

SHEET GENERAL NOTES

A. EXISTING FLOORS, WALLS, CEILINGS, ETC IN FINISHED SPACES SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UPON COMPLETION OF WORK. THIS INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: CLEANING, PATCHING, REPLACING CEILING TILES, REPLACING WALL COVERING, PAINTING, ETC.

B. PROVIDE 2 WEEKS NOTICE IN WRITING TO OWNER PRIOR TO SHUTDOWN OF ANY EQUIPMENT, UNLESS NOTED OTHERWISE.

C. ELECTRICAL CONTRACTOR SHALL MEET WITH OWNER TO DO PHASING PLAN AND COORDINATE ALL ITEMS IN PANELS TO BE DE-ENERGIZED BEFORE ANY DOWNTIME.

D. SEE SHEET E-601 FOR ADDITIONAL INFORMATION.

E. CONTRACTOR WORKING HOURS SHALL BE DESIGNATED BY THE VA. THE VA SHALL DICTATE WHEN OUTAGES CAN OCCUR. CONTRACTOR SHALL ASSUME THAT OUTAGES WILL BE SCHEDULED DURING NON-BUSINESS HOURS AND THAT WORK SHALL CONTINUE UNINTERRUPTED UNTIL SERVICE IS RESTORED, UNLESS SPECIFICALLY NOTED OTHERWISE.

F. CONTRACTOR SHALL MONITOR FUEL LEVELS OF GENERATORS THAT ARE BEING USED DURING CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE VA WHEN FUEL LEVELS DROP TO A 1/4 OF TANK.

G. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING NEW COORDINATION STUDY AND ADJUSTING TRIP SETTINGS ON ALL ELECTRONIC TRIP CIRCUIT BREAKERS. CIRCUIT BREAKERS SHALL COORDINATE WITH PANELS THEY ARE FEEDING. CONTACT TSP ARCHITECTS AND ENGINEERS FOR EXISTING COORDINATION STUDY.

SHEET KEYNOTES

1. DISCONNECT AND REMOVE EXISTING SWITCHBOARD 5-2 AFTER TEMPORARY DISTRIBUTION BOARDS HAVE BEEN INSTALLED, ENERGIZED AND EXISTING LOADS TRANSFERRED. EXTEND EXISTING CONDUCTORS AS REQUIRED AND TRANSFER LOADS PER PANEL SCHEDULES. SEE KEYNOTE #7 BELOW.
2. DISCONNECT AND REMOVE EXISTING 1600A BUSSWAY.
3. EXISTING SHELVING UNIT TO BE RELOCATED BY VA PRIOR TO BEGINNING OF CONSTRUCTION.
4. NEW SWITCHBOARD 5-2, EXTEND EXISTING CONDUIT SYSTEM AS REQUIRED TO ACCOMMODATE NEW SWITCHBOARD AND PROVIDE NEW CONDUCTORS AS SHOWN IN DISTRIBUTION RISER DIAGRAM. SEE KEYNOTE #14 ON THIS SHEET. CUT AND PATCH EXISTING FLOOR SLAB IF NECESSARY. CONNECT BACK INTO EXISTING GROUNDING SYSTEM. PROVIDE A KIRK-KEY INTERLOCK SYSTEM FOR 1600A MCB AND 1600A TIE-BREAKER. PROVIDE 2 KEYS FOR KIRK-KEY INTERLOCK SYSTEM.
5. NOT USED.
6. PROVIDE TWO NEW TEMPORARY 1200A, HEAVY DUTY FUSED DISCONNECT SWITCHES IN A NEMA 3R ENCLOSURE. COORDINATE EXACT MOUNTING LOCATIONS WITH VA PRIOR TO INSTALLATION. DISCONNECT SWITCHES ARE TO REMAIN IN-PLACE BUT DISCONNECT FEEDERS FROM TRANSFORMER AFTER INSTALLATION OF NEW SWITCHBOARD 5-2 IS COMPLETED. COIL UP FEEDERS AND PLACE IN FRONT OF TEMPORARY "1-LINE" DISTRIBUTION PANELS FOR FUTURE USE.
7. PROVIDE NEW TEMPORARY WALL MOUNTED 1200A "1-LINE" DISTRIBUTION BOARD. TRANSFER LOADS FROM EXISTING SWITCHBOARD 5-2 TO THIS DISTRIBUTION BOARD PER PANEL SCHEDULES. TRANSFER LOADS BACK TO NEW SWITCHBOARD 5-2 AFTER 5-2 HAS BEEN INSTALLED AND ENERGIZED. DISTRIBUTION BOARD TO REMAIN IN-PLACE FOR FUTURE USE AFTER ALL LOADS HAVE BEEN TRANSFERRED TO NEW SWITCHBOARD 5-2 IS COMPLETED.
8. PROVIDE NEW TEMPORARY SERVICE ENTRANCE 1200A FEEDERS FROM "1-LINE" DISTRIBUTION BOARDS OUT TO NEW FUSED DISCONNECT SWITCHES. COORDINATE ROUTING OF FEEDERS WITH VA PRIOR TO INSTALLATION. SEAL ALL WALL PENETRATIONS. FEEDERS TO REMAIN IN-PLACE AFTER INSTALLATION AND ENERGIZATION OF NEW SWITCHBOARD 5-2 IS COMPLETED.
9. PROVIDE NEW TEMPORARY SERVICE ENTRANCE 1200A FEEDERS FROM DISCONNECT SWITCHES TO EXISTING TRANSFORMER TR-42. PROVIDE APPROXIMATELY 50' OF CABLE. CABLES ARE TO BE DISCONNECTED AND COILED UP IN FRONT OF TEMPORARY "1-LINE" DISTRIBUTION PANELS FOR FUTURE USE AFTER THE INSTALLATION OF SWITCHBOARD 5-2 IS COMPLETED.
10. PROVIDE TRANSFORMER SECONDARY LUGS WITH PHYSICAL CAPACITY TO ACCOMMODATE BOTH NEW AND EXISTING CONDUCTORS. SUPPORT CONDUCTORS INSIDE TRANSFORMER CABINET TO AVOID EXCESSIVE STRAIN ON SECONDARY LANDING LUGS. DOWN TIME SHALL BE MINIMAL. COORDINATE ANY DOWN TIME WITH VA. COORDINATE ANY NECESSARY RUN-TIME OF HOSPITAL GENERATORS WITH VA.
11. MAINTAIN EXISTING FEEDERS TO EXISTING LOADS.
12. SPLICE FEEDERS AND BRANCH CIRCUITS PREVIOUSLY SERVED BY OLD SWITCHBOARD. PROVIDE JUNCTION BOXES AS NEEDED. FIELD VERIFY QUANTITIES.
13. EXTEND CIRCUITS TO NEW MDP TEMP-1 AND MDP TEMP-2 AS STATED ON THE PANEL SCHEDULES. COORDINATE PHASING OF THIS WORK WITH VA TO MINIMIZE DOWN TIME.
14. DISCONNECT AND REMOVE EXISTING 4 SETS OF 4-#500KCMIL CU & 1-#1 CU GRD CONDUCTORS FROM TRANSFORMER TR-42. MAINTAIN THE FOUR EXISTING 4" CONDUITS AND PULL IN 4 NEW SETS OF 4-#600KCMIL CU & 1-#1/0 CU GRD CONDUCTORS AND CONNECT TO NEW SWITCHBOARD 5-2.
15. AFTER INSTALLATION ON NEW SWITCHBOARD 5-2 IS COMPLETED, EXTEND EXISTING CIRCUITS TO SWITCHBOARD PER PANEL SCHEDULE ON THIS SHEET. COORDINATE PHASING OF THIS WORK WITH VA TO MINIMIZE DOWN TIME.
16. PROVIDE TEMPORARY GROUNDING PER N.E.C..
17. RECONNECT EXISTING GROUNDING ELECTRODES.

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
6729
DARRELL L. BREN
DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: ELECTRICAL PLANS - BUILDING 5

Approved Project Director:

Project Title: Upgrade Campus Electrical Service

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JWN

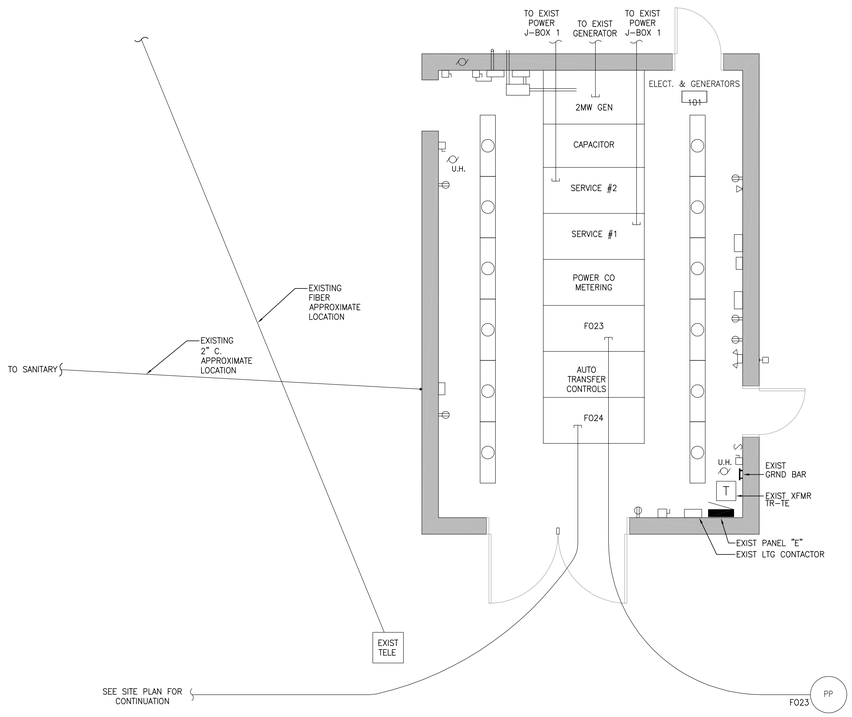
Project Number: 438-13-121

Building Numbers: 5 AND 27

Drawing Number: E-101 Dwg. 9 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

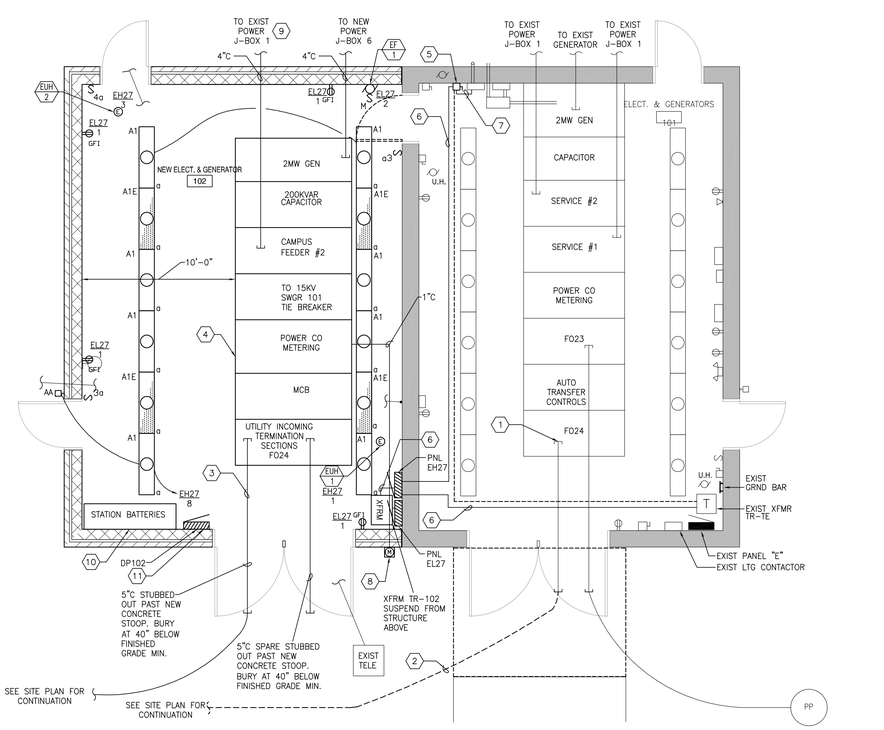
VA FORM 08-6231



C1 BUILDING 27 15KV SWITCHGEAR REPLACEMENT - EXISTING

SCALE: 1/4"=1'-0"

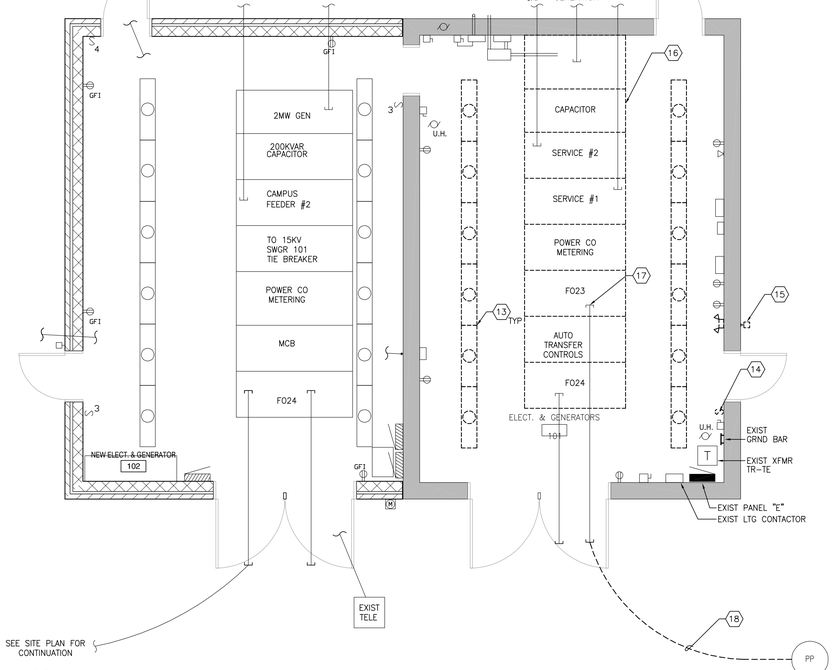
PLAN NORTH



C4 BUILDING 27 15KV SWITCHGEAR REPLACEMENT - PHASE I

SCALE: 1/4"=1'-0"

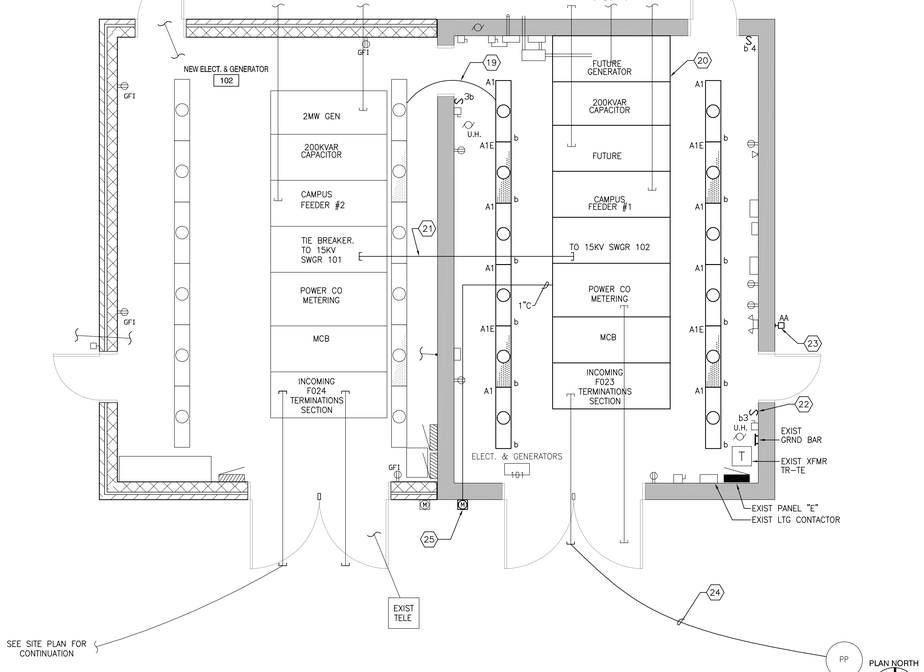
PLAN NORTH



F1 BUILDING 27 15KV SWITCHGEAR REPLACEMENT - PHASE II

SCALE: 1/4"=1'-0"

PLAN NORTH



F4 BUILDING 27 15KV SWITCHGEAR REPLACEMENT - PHASE III

SCALE: 1/4"=1'-0"

PLAN NORTH

SHEET GENERAL NOTES

A. SEE SHEET E-001, E-101, E-501, AND E-602 ADDITIONAL FOR GENERAL ELECTRICAL NOTES.

SHEET KEYNOTES

PHASE I:

1. ELECTRICAL CONTRACTOR SHALL PULL OUT CIRCUIT BREAKER SO THAT UTILITY CAN DISCONNECT F024 15KV SERVICE FROM EXISTING BUILDING 27 SWITCHGEAR. COORDINATE REQUIREMENTS WITH UTILITY. IF DOWNTIME OF EXISTING 15KV SWITCHGEAR IS REQUIRED, PROVIDE A TEMPORARY 2MW 13800, 3PH CONNECTED TO POWER J-BOX 1 FEEDER 1 SIDE.
2. UTILITY SHALL REMOVE 15KV CABLE BACK TO UTILITY POLE. EXISTING CONDUIT STUB OUT SHALL REMAIN FOR REUSE. SEE SHEET ES101, E-501, AND E-602 FOR ADDITIONAL INFORMATION.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE 5" PVC CONDUIT FROM F024 SECTION TO 5' SOUTH OF BUILDING. UTILITY SHALL PROVIDE 15KV CABLE FROM UTILITY POLE SWITCHES TO NEW 15KV SWITCHGEAR F024 SECTION, DIRECT BURY CABLE, AND ROUTE THROUGH CONDUIT TO SECTION F024.
4. PROVIDE MULTISECTION 15KV 1200A SWITCHGEAR 102. SEE E-501 AND E-601 FOR ADDITIONAL INFORMATION.
5. REMOVE AND DISPOSE OF EXISTING 60A FUSED SWITCH. CONDUIT AND CONDUCTORS ON LOAD SIDE OF SWITCH SHALL BE REMOVED AND DISPOSED OF IN THEIR ENTIRETY.

   PROVIDE A NEW 600V, 100A, 3POLE FUSED SWITCH WITH (3) 100A FUSES. CONNECT TO AS SHOWN. SEE E-601 FOR ADDITIONAL INFORMATION.
6. SEE SHEET E-501 AND E-602 FOR SIZING INFORMATION.
7. REPLACE EXISTING CONDUIT AND CONDUCTORS WITH 4#1 AWG + 1#8 GROUND, 1 1/2"C. SPLICE WITH EXISTING #1/0 AWG CONDUCTORS IN EXISTING JUNCTION BOX.
8. INSTALL UTILITY FURNISHED METER SOCKET, CT'S, AND PT'S. PROVIDE 1"C FROM METER SOCKET TO POWER COMPANY METER SECTION IN SWITCHGEAR. 1"C SHALL DISTANCE NOT EXCEED 25'. INSTALL METER SOCKET, CT'S, AND PT'S PER XCEL ENERGY REQUIREMENTS.
9. INTERCEPT EXISTING CONDUIT AS SHOWN ON D4/E-602.
10. PROVIDE BATTERY RACK TO SERVE PARALLELING GEAR AND SERVICE SWITCHGEAR PER SPECIFICATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ASSOCIATED INTERCONNECT WIRING AND CONDUIT FOR DC SYSTEM PER EQUIPMENT MANUFACTURER REQUIREMENTS. VERIFY REQUIREMENTS WITH GEAR MANUFACTURER.
11. PROVIDE A 150A 125VDC DISTRIBUTION PANEL FED FROM STATION BATTERIES. PROVIDE (15) 20A-2P CIRCUITS, CONNECT ONE CIRCUIT TO EACH SECTIONS OF 15KV SWITCHGEAR. SEE SPECIFICATION FOR MORE INFORMATION.
12. SUSPEND TRANSFORMER FROM STRUCTURE ABOVE. PROVIDE UNISTRUT SUPPORT CONNECTED TO 1/2" THREADED ROD (ONE AT EACH CORNER) AND ASSOCIATED HARDWARE BASED ON THE WEIGHT OF TRANSFORMER PROVIDED. CONNECT THREADED ROD TO STRUCTURAL. BOTTOM OF TRANSFORMER SHALL BE AT 7'-0" MIN. SEE STRUCTURAL.

PHASE II:

13. REMOVE AND DISPOSE OF LUMINAIRES. REMOVE CONDUCTORS BACK TO SOURCE. SALVAGE CONDUIT AS ABLE.
14. REMOVE DEVICE. EXISTING BACKBOX SHALL REMAIN FOR REUSE.
15. REMOVE EXTERIOR WALL PACK. EXISTING BACKBOX SHALL REMAIN FOR REUSE.
16. REMOVE AND DISPOSE OF EXISTING 15KV SWITCHGEAR. EXISTING CONDUITS ENTERING THROUGH FLOOR SLAB SHALL REMAIN.
17. ELECTRICAL CONTRACTOR SHALL PULL OUT CIRCUIT BREAKER SO THAT UTILITY CAN DISCONNECT F023 15KV SERVICE FROM EXISTING BUILDING 27 SWITCHGEAR. COORDINATE REQUIREMENTS WITH UTILITY.
18. UTILITY SHALL REMOVE 15KV CABLE BACK TO UTILITY POLE. EXISTING CONDUIT STUB OUT SHALL REMAIN FOR REUSE. SEE SHEET ES101, E-501, AND E-602 FOR ADDITIONAL INFORMATION.

PHASE III:

19. CONNECT LUMINAIRES IN ROOM 101 TO ROOM 102 LIGHTING CIRCUIT. CONTROL VIA SWITCHES IN ROOM 101.
20. PROVIDE MULTISECTION 15KV 1200A SWITCHGEAR 101. SEE E-501 AND E-601 FOR ADDITIONAL INFORMATION.
21. PROVIDE A 15KV, 200A CABLE CONNECTIONS SWGR 101 AND SWGR 102. ROUTE CABLING OVERHEAD. COMPLY WITH CABLE MANUFACTURERS INSTALLATION INSTRUCTIONS.
22. PROVIDE A NEW 3-WAY SWITCH IN EXISTING BACKBOX.
23. PROVIDE LUMINAIRE TYPE 'AA', MOUNT ON EXISTING BACKBOX.
24. UTILITY SHALL PROVIDE 15KV CABLE FROM UTILITY POLE SWITCHES TO NEW 15KV SWITCHGEAR 101 F023 SECTION, DIRECT BURY CABLE, AND ROUTE THROUGH EXISTING CONDUIT TO SECTION F023.
25. INSTALL UTILITY FURNISHED METER SOCKET, CT'S, AND PT'S. PROVIDE 1"C FROM METER SOCKET TO POWER COMPANY METER SECTION IN SWITCHGEAR. 1"C SHALL DISTANCE NOT EXCEED 25'. INSTALL METER SOCKET, CT'S, AND PT'S PER XCEL ENERGY REQUIREMENT.

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
6729
DARRELL L. BREN
DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

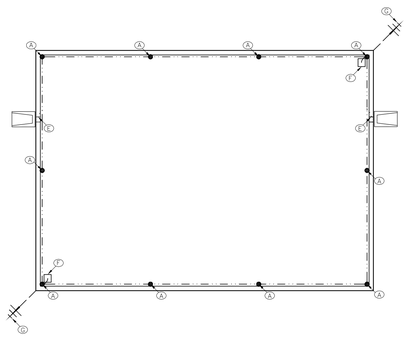
To Solve. To Excel. Together.

Drawing Title	ELECTRICAL PLANS - BUILDING 27
Approved Project Director	
Project Title	Upgrade Campus Electrical Service
Location	Sioux Falls, South Dakota
Date	04/17/2013
Checked	DLB
Drawn	JWN
Project Number	438-13-121
Building Numbers	5 AND 27
Drawing Number	E-102
Dwg. 10 of 14	

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

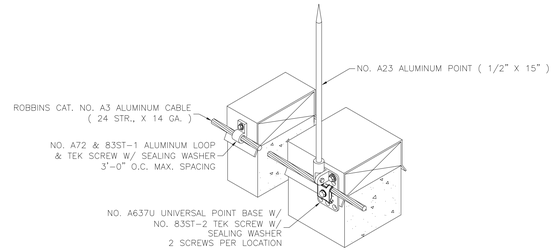


LIGHTNING PROTECTION ROOF PLAN
SWITCHGEAR BUILDING
(1/8" = 1'-0)

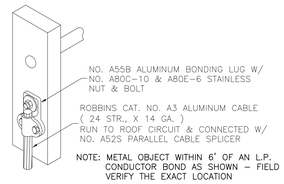
NORTH

0 4' 8' 16' 24'

XX'-X" = DENOTES RIDGE / EAVE / PARAPET HEIGHT FROM GRADE

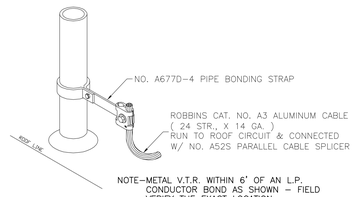


(A) TYPICAL PARAPET AIR TERMINAL
N.T.S.



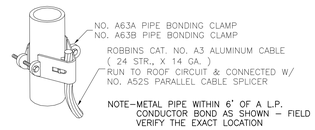
NOTE: METAL OBJECT WITHIN 6' OF AN L.P. CONDUCTOR BOND AS SHOWN – FIELD VERIFY THE EXACT LOCATION

(B) TYPICAL MISCELLANEOUS BOND
N.T.S.



NOTE–METAL V.T.R. WITHIN 6' OF AN L.P. CONDUCTOR BOND AS SHOWN – FIELD VERIFY THE EXACT LOCATION

(C) TYPICAL ROOF VENT BOND
N.T.S.



NOTE–METAL PIPE WITHIN 6' OF A L.P. CONDUCTOR BOND AS SHOWN – FIELD VERIFY THE EXACT LOCATION

(D) TYPICAL PIPE BOND
N.T.S.

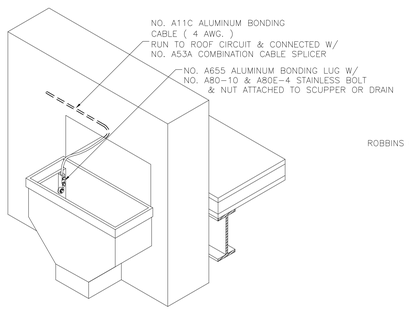
LEGEND

●	AIR TERMINAL		ROBBINS CAT. NO. A3 ALUMINUM CABLE EXPOSED (24 STR., X 14 GA.)
⊕	ROOF DRAIN		CAT. NO. 6 COPPER CABLE BELOW GRADE (30 STR., X 17 GA. – 2 AWG.)
□	THRU-ROOF		ROBBINS CAT. NO. A11C ALUMINUM BONDING WIRE (#4 AWG.)
⏚	GROUND ROD LOCATION		

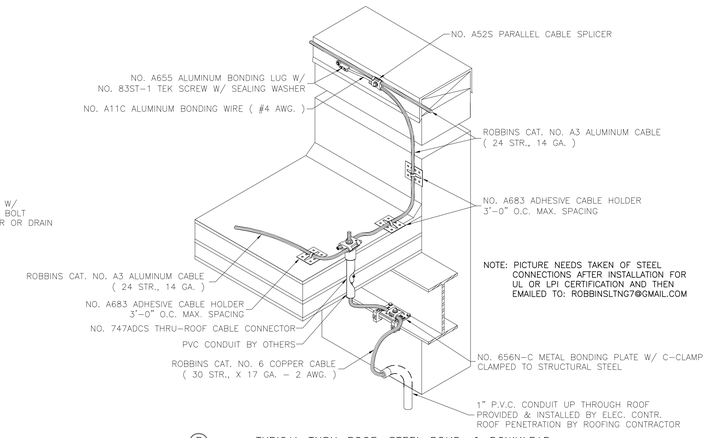
GENERAL NOTES

THE DESIGN & DETAILS SHOWN WILL MEET THE REQUIREMENTS OF UNDERWRITERS LABORATORY CODE 96/96A, NATIONAL FIRE PROTECTION ASSOCIATION CODE 780 & THE LIGHTNING PROTECTION INSTITUTE CODE 175 FOR LIGHTNING PROTECTION SYSTEMS

1.) A CONDUCTOR BEND SHALL NOT FORM A SHARPER ANGLE THAN 90 DEGREES OR HAVE A RADIUS LESS THAN 8 INCHES.
2.) METAL BODIES OF INDUCTANCE LOCATED WITHIN 6' OF A MAIN LIGHTNING COMPONENT SHALL BE BONDED TO THE LIGHTNING PROTECTION SYSTEM. (INCLUDING BUT NOT LIMITED TO METAL VENTS, FLASHING, LOUVERS & ROOF DRAINS)
3.) CONNECTIONS TO GROUND AND/OR COUNTERPOISE SHALL BE MADE AT A POINT NOT LESS THAN 2'-0 BELOW GRADE, AND 3'-0 TO 8'-0 AWAY FROM FOUNDATION WALL.
4.) AIR TERMINAL SHALL BE PLACED AT THE LOCATIONS INDICATED, NOT MORE THAN 2'-0 FROM THE ENDS OF RIDGES, OUTSIDE CORNERS, OR OUTSIDE EDGES OF MAIN ROOFS, AND MUST EXTEND A MINIMUM OF 10" ABOVE THE OBJECT TO BE PROTECTED.
5.) MID-ROOF AIR TERMINALS SHALL BE SPACED AT 50'-0" O.C. MAX. SPACING.
6.) PERIMETER AIR TERMINALS THAT ARE LESS THAN 24" IN HEIGHT SHALL BE SPACED AT 20'-0" O.C. MAX. PERIMETER AIR TERMINALS THAT ARE 24" IN HEIGHT OR GREATER SHALL BE SPACED AT 25'-0" O.C. MAX.
7.) JOB CONDITIONS MAY DICTATE SLIGHT VARIATIONS IN AIR TERMINAL AND GROUND ROD LOCATIONS, BUT IN NO INSTANCE SHALL A VARIATION BREAK COMPLIANCE WITH THESE NOTES AND REQUIREMENTS.
8.) CONDUCTORS SHALL MAINTAIN A HORIZONTAL OR DOWNWARD PATH FREE FROM "U" AND "V" POCKETS. ANY RISE IN CONDUCTOR SHALL BE NO STEEPER THAN 3" OF RISE PER 12" OF RUN.
9.) COPPER LIGHTNING PROTECTION MATERIALS SHALL NOT BE PLACED ON ALUMINUM, GALVALUM, OR BARE GALVANIZED STEEL SURFACES. ALUMINUM MATERIALS SHALL NOT BE PLACED ON COPPER SURFACES.
10.) FOR THE SAKE OF CLARITY WE HAVE NOT CALLED OUT EACH INDIVIDUAL ITEM OF LIGHTNING PROTECTION MATERIALS ON THE ROOF PLAN. WE HAVE SHOWN TYPICAL DETAILS AND HAVE CALLED OUT EACH OF THESE DETAILS ON THE ROOF PLAN, ONLY IN SCATTERED LOCATIONS.
11.) ALL MISCELLANEOUS STEEL INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, REBAR, FRAMING & RAILINGS, SHALL BE MADE ELECTRICALLY CONTINUOUS THROUGH CONSTRUCTION (NOT THE RESPONSIBILITY OF THE LIGHTNING PROTECTION CONTRACTOR.)
12.) ELECTRIC, TELEPHONE, ANTENNA SYSTEM, AND OTHER MISCELLANEOUS GROUNDS SHALL BE CONNECTED WITH MAIN SIZED CONDUCTOR TO ANY LIGHTNING PROTECTION GROUND.
13.) A LIGHTNING ARRESTOR, PROTECTOR, OR ANTENNA-DISCHARGE UNIT MUST BE INSTALLED ON EACH ELECTRIC AND TELEPHONE SERVICE ENTRANCE AND RADIO AND TELEVISION ANTENNA LEAD IN. (TO BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.)
14.) ALL ADHESIVE FIXTURES SHALL BE SET WITH AN ADHESIVE COMPOUND COMPATIBLE WITH THE ROOFING MATERIAL. ADHESIVES SHALL BE APPROVED IN ADVANCE BY THE ROOFING CONTRACTOR.
15.) BOND ALL METAL PIPES SUCH AS WATER, GAS, FIRE, STORM, SEWER WHICH ENTER THE STRUCTURE TO THE NEAREST DOWNLEAD, GROUND ROD OR COUNTERPOISE.
16.) SEAL THE ENDS OF CONDUIT MOISTURE TIGHT WITH DUCT SEAL, SILICONE OR LEAD WEDGES (NOT THE RESPONSIBILITY OF THE LIGHTNING PROTECTION CONTRACTOR).
17.) CABLE MUST BE FASTENED EVERY 3'-0" O.C. MAXIMUM.
18.) THE LIGHTNING PROTECTION INSTALLER IS TO CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE THE WORK IS STARTED. INSTALLERS WHO FAIL TO VERIFY, REVIEW, AND COORDINATE THE WORK SHALL TAKE FULL RESPONSIBILITY FOR THE WORK AND ANY PORTION OF THE WORK THAT IS IMPROPERLY INSTALLED OR LOCATED. THE INSTALLER SHALL NOTIFY THE DESIGNER IF DIMENSIONAL ERRORS OR DESIGN CONFLICTS OCCUR, AND SHALL PROCEED ONLY UPON CLARIFICATION OR REVISION AS ISSUED BY ROBBINS LIGHTNING, INC.
19.) ALL LIGHTNING PROTECTION SYSTEMS REQUIRE PROPERLY INSTALLED SURGE PROTECTIVE DEVICES AS OUTLINED IN PARAGRAPH 13 OF UL 96A.
20.) WHERE POSSIBLE, SECURELY INSERT CABLE INTO EXISTING SPLICER OR POINT BASE TO CONSERVE SPLICERS
21.) PICTURES NEED TO BE TAKEN WHERE BONDS ARE GOING TO BE CONCEALED OR BURIED SUCH AS WATER, GAS, & ELECTRIC BONDS; GROUND RODS; THRU WALLS & THRU ROOFS, (INTERIOR PICTURES)
22.) THIS SYSTEM INCLUDES BONDING TO GAS PIPING PER CURRENT CODES. IF "CSST" GAS PIPING IS PRESENT, CURRENT PRACTICE MAY BE INADEQUATE TO PREVENT FLASHOVER FROM THE LIGHTNING PROTECTION SYSTEM. BONDING METHODS ARE UNDER CODE REVIEW. THE LIGHTNING PROTECTION MANUFACTURER, INSTALLER, LPI AND LPI-IP ACCEPT NO LIABILITY DUE TO LACK OF CONSENSUS ON MEASURES REQUIRED TO PREVENT DAMAGE, INJURY, OR LOSS DUE TO "CSST" FAILURES.

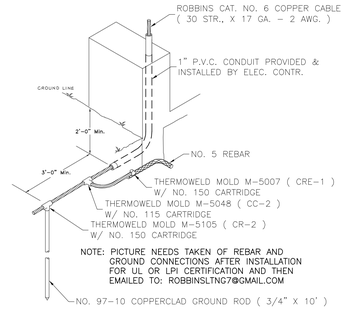


(E) TYPICAL SCUPPER BOND
N.T.S.



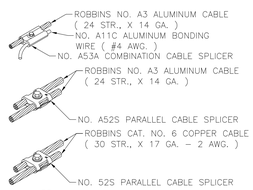
NOTE: PICTURE NEEDS TAKEN OF STEEL CONNECTIONS AFTER INSTALLATION FOR UL OR LPI CERTIFICATION AND THEN EMAILED TO: ROBBINSLTNG7@GMAIL.COM

(F) TYPICAL THRU-ROOF, STEEL BOND, & DOWNLEAD
N.T.S.

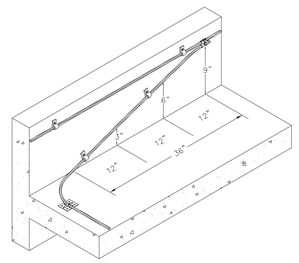


NOTE: PICTURE NEEDS TAKEN OF REBAR AND GROUND CONNECTIONS AFTER INSTALLATION FOR UL OR LPI CERTIFICATION AND THEN EMAILED TO: ROBBINSLTNG7@GMAIL.COM

(G) TYPICAL DOWNLEAD, REBAR BOND, AND GROUND CONNECTION
N.T.S.

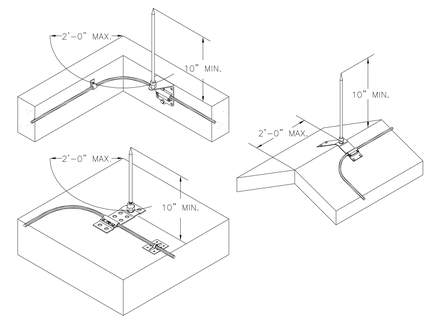


(H) TYPICAL SPLICER DETAIL
N.T.S.



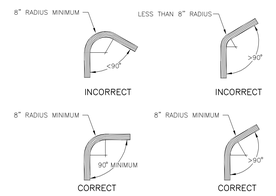
CABLE MAY RUN UPHILL FROM BONDING OR AIR TERMINAL LOCATIONS NOT TO EXCEED A RATE OF 3" OF RISE PER 12" OF RUN. FASTEN CABLE EVERY 3'-0" O.C. MAXIMUM.

(J) TYPICAL 3 TO 12 CABLE RISE ELEVATION
N.T.S.



NOTE: AIR TERMINALS MUST BE WITHIN 2' FROM AN OUTSIDE CORNER AS INDICATED, THIS WOULD APPLY TO ALL SITUATIONS. PARAPETS, FLAT ROOFS, METAL UNITS, ETC.

(K) TYPICAL PLACEMENT OF AIR TERMINALS AT OUTSIDE CORNERS
N.T.S.



REFER TO GENERAL NOTE NO. 1 SHEET ONE

(L) TYPICAL ACCEPTABLE CABLE BEND
N.T.S.

FINAL CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER
6729
DARRELL L BREN
DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP
To Solve. To Excel. Together.

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: BUILDING 27 LIGHTNING PROTECTION PLAN

Approved: Project Director

Project Title: Upgrade Campus Electrical Service

Project Number: 438-13-121

Building Numbers: 5 AND 27

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JWN

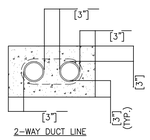
Drawing Number: E-103
Dwg. 11 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

DUCT BANK NOTES:

1. CONCRETE SHALL BE 2000 P.S.I. @ 28 DAYS, OR AS SPECIFIED.
2. PROVIDE REINFORCING RODS ON TOP AND BOTTOM OF DUCTS WHEN CROSSING OR PLACED IN ROADWAYS.
3. MINIMUM COVER TO TOP OF ENVELOPE SHALL BE 24" [610mm].
4. PROVIDE MINIMUM 6" [152mm] SPACE BETWEEN POWER AND TELECOMMUNICATION DUCTS. INCREASE SIZE AS REQUIRED.
5. INNERDUCT QUANTITY AND SIZE AS INDICATED ON PLANS.

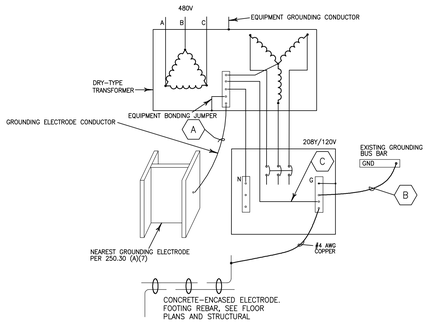


2-WAY DUCT LINE

A1 DUCT BANK DETAIL
SCALE: NONE

CIRCUIT SCHEDULE			
MARK (AMPACITY)	4-WIRE (W/NEUTRAL) PH/N-GND-C	3-WIRE (NO NEUTRAL) PH-GND-C	SEPARATELY DERIVED PH/N-GND-C
15	12-12-3/4"	12-12-3/4"	12-8-3/4"
20	12-12-3/4"	12-12-3/4"	12-8-3/4"
25	10-10-3/4"	10-10-3/4"	10-8-3/4"
30	10-10-3/4"	10-10-3/4"	10-8-3/4"
35	8-10-1"	8-10-3/4"	8-8-1"
40	8-10-1"	8-10-3/4"	8-8-1"
45	6-10-1 1/4"	6-10-1"	6-8-1 1/4"
50	6-10-1 1/4"	6-10-1"	6-8-1 1/4"
60	6-10-1 1/4"	6-10-1"	6-8-1 1/4"
70	4-8-1 1/2"	4-8-1 1/4"	4-8-1 1/2"
80	3-8-1 1/2"	3-8-1 1/2"	3-8-1 1/2"
90	3-8-1 1/2"	3-8-1 1/2"	3-8-1 1/2"
100	2-8-1 1/2"	2-8-1 1/2"	2-8-1 1/2"
110	2-6-1 1/2"	2-6-1 1/2"	2-6-1 1/2"
125	1-6-2"	1-6-1 1/2"	1-6-2"
150	1/0-6-2"	1/0-6-2"	1/0-6-2"
175	2/0-6-2	2/0-6-2"	2/0-4-2"
200	3/0-6-2 1/2"	3/0-6-2"	3/0-4-2 1/2"
225	4/0-4-2 1/2"	4/0-4-2 1/2"	4/0-2-2 1/2"
250	250 KCMIL-4-3"	250 KCMIL-4-2 1/2"	250 KCMIL-2-3"
300	350 KCMIL-4-3"	350 KCMIL-4-3"	350 KCMIL-2-3"
350	500 KCMIL-3-3 1/2"	500 KCMIL-3-3"	500 KCMIL-1/0-3 1/2"
400	600 KCMIL-3-4"	600 KCMIL-3-3 1/2"	600 KCMIL-3-4"
400	(2) 3/0-3-2 1/2"	(2) 3/0-3-2"	(2) 3/0-1/0-2 1/2"
450	(2) 4/0-2-2 1/2"	(2) 4/0-2-2 1/2"	(2) 4/0-1/0-3"
500	(2) 250 KCMIL-2-3"	(2) 250 KCMIL-2-2 1/2"	(2) 250 KCMIL-1/0-3"
600	(2) 350 KCMIL-1-3"	(2) 350 KCMIL-1-3"	(2) 350 KCMIL-2/0-3"
700	(2) 500 KCMIL-1/0-3 1/2"	(2) 500 KCMIL-1/0-3"	(2) 500 KCMIL-2/0-3 1/2"
800	(3) 300 KCMIL-1/0-3"	(3) 300 KCMIL-1/0-2 1/2"	(3) 300 KCMIL-2/0-3"
1000	(4) 300 KCMIL-2/0-3"	(4) 300 KCMIL-2/0-2 1/2"	(4) 300 KCMIL-3/0-3 1/2"
1000	(3) 500 KCMIL-2/0-3 1/2"	(3) 500 KCMIL-2/0-3"	(3) 500 KCMIL-2/0-3"
1200	(4) 500 KCMIL-3/0-3 1/2"	(4) 500 KCMIL-3/0-3"	(4) 500 KCMIL-4/0-3 1/2"
1600	(5) 500 KCMIL-4/0-3 1/2"	(5) 500 KCMIL-4/0-3"	(5) 500 KCMIL-250-3 1/2"
2000	(6) 500 KCMIL-250 KCMIL-3 1/2"	(6) 500 KCMIL-250 KCMIL-3"	(6) 500 KCMIL-3/0-3 1/2"
2500	(8) 500 KCMIL-350 KCMIL-3 1/2"	(8) 500 KCMIL-350 KCMIL-3"	(8) 500 KCMIL-3/0-3 1/2"
2500	(7) 600 KCMIL-350 KCMIL-4"	(7) 600 KCMIL-350 KCMIL-3 1/2"	(7) 600 KCMIL-3/0-4"
3000	(9) 500 KCMIL-500 KCMIL-3 1/2"	(9) 500 KCMIL-500 KCMIL-3"	(9) 500 KCMIL-3/0-3 1/2"
3000	(8) 600 KCMIL-500 KCMIL-4"	(8) 600 KCMIL-500 KCMIL-3 1/2"	(8) 600 KCMIL-3/0-4"

MISCELLANEOUS NOTES:
1. ALL CIRCUITS (BRANCH, FEEDERS, AND SERVICE) SHALL BE SIZED PER THE OVERCURRENT DEVICE AND THIS CIRCUIT SCHEDULE UNLESS OTHERWISE NOTED. THE ABOVE CHART IS THE MINIMUM CONDUCTOR AND CONDUIT SIZE FOR THE OVERCURRENT DEVICE. CHART DOES NOT INCLUDE REQUIRED VOLTAGE DROP.
2. CIRCUITS SHALL BE 4 WIRE (4W) UNLESS DENOTED WITH "3W" (3 WIRE) OR "K" (K RATED), OR IS THE SERVICE ENTRANCE FROM THE UTILITY.
3. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR.
4. ALL CONDUCTORS SHALL BE COPPER.
5. THE NEUTRAL SHALL BE THE SAME SIZE AS THE PHASE CONDUCTORS UNLESS K RATED, 3-WIRE, OR NOTED OTHERWISE.
6. THE NUMBER OF PARALLEL SETS IS INDICATED IN PARENTHESIS.
7. SINGLE PHASE CIRCUITS SHALL BE SIZED PER THE OVERCURRENT DEVICE UNLESS OTHERWISE NOTED. SIZE THE CONDUCTORS AND CONDUIT PER THE 4-WIRE COLUMN OF THIS CHART BUT REDUCE THE AMOUNT OF PHASE CONDUCTORS AS REQUIRED.



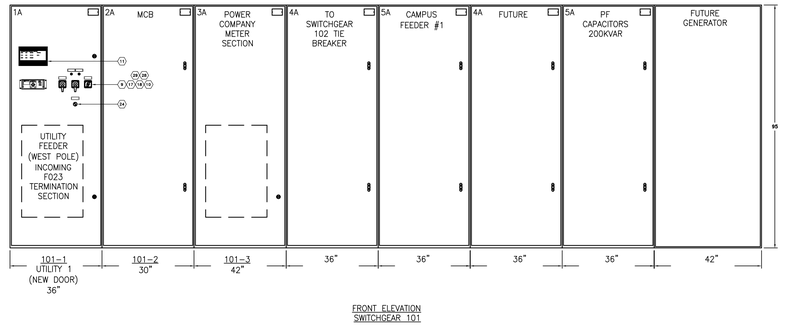
KEYNOTES

A. GROUNDING ELECTRODE CONDUCTOR TO GROUNDING ELECTRODE, AS SHOWN. SIZE PER NEC TABLE 250.66.

B. #3/0 AWG BARE COPPER CONDUCTOR.

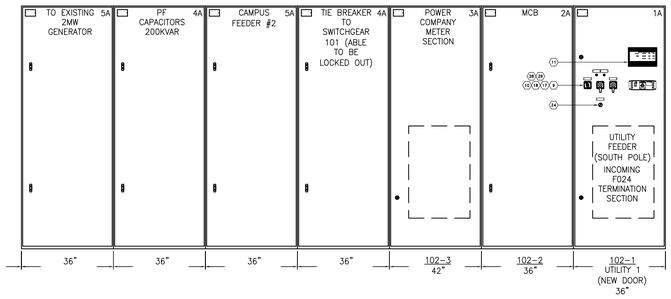
C. SYSTEM BONDING JUMPER SHALL NOT BE SMALLER THAN THE SIZES SHOWN IN NEC TABLE 250.66. WHERE THE SUPPLY CONDUCTORS ARE LARGER THAN 1100 KCMIL COPPER, THE BONDING JUMPER SHALL HAVE AN AREA THAT IS NOT LESS THAN 12 1/2 PERCENT OF THE AREA OF THE LARGEST PHASE CONDUCTOR.

C3 BUILDING 27 15KV SWITCHGEAR 102 ELEVATION
SCALE: NONE



FRONT ELEVATION
SWITCHGEAR 101

B5 BUILDING 27 15KV SWITCHGEAR 101 ELEVATION
SCALE: NONE



FRONT ELEVATION
SWITCHGEAR 102

D5 BUILDING 27 15KV SWITCHGEAR 102 ELEVATION
SCALE: NONE

LIGHT FIXTURE SCHEDULE

FIXT TYPE	MANUFACTURER	CATALOG NUMBERS	VOLTAGE	MOUNTING	BALLAST QTY	LAMP DATA TYPE	No.	WATTS	REMARKS	ADDITIONAL MANUFACTURERS
A1	HE WILLIAMS	81-4-232-EB2-277	277	PENDANT	1	FLU	2	32	1'X4 NOMINAL PENDANT INDUSTRIAL LUMINAIRE, CHAIN HANG AS HIGH AS POSSIBLE	METALUX, COLUMBIA
A1E	HE WILLIAMS	81-4-232-*-277	277	PENDANT	1	FLU	2	32	1'X4' NOMINAL PENDANT INDUSTRIAL LUMINAIRE WITH INTEGRAL EMERGENCY BALLAST SEE NOTE 1. CHAIN HANG HAS HIGH AS POSSIBLE.	METALUX, COLUMBIA
AA	COOPER	XTORIA-PC1	277	WALL	-	LED	1	10	10W LED EXTERIOR WALL PACK WITH INTEGRAL PHOTOCELL.	

NOTES
1. PROVIDE EMERGENCY BALLAST WITH SELF TESTING AND 1100-1400 LUMEN OUTPUT EQUAL TO BODINE MODEL B50-ST.

PANEL TAG: EH27 — VOLTAGE: 277/480 VAC, 3-PHASE, 4-WIRE
MOUNTING: SURFACE — MAINS: LUG [ ] C.B. [X] AMPS: 100
FEEDER: (SEE RISER DIAGRAM) — FEED THRU LUG [ ]
PANEL TYPE: LTG & APPLIANCE — MIN A.I.C.: (A)

CKT	ITEM OR AREA SERVED	O/C PROT	DIST KVA	P	DIST KVA	O/C PROT	ITEM OR AREA SERVED	CKT
1	EUH-1	20/1	3.3	A	0.0	80/3	30KVA XFRM 'TE'	2
3	EUH-2	20/1	3.3	B	0.0	–	–	4
5	30KVA XFRM TR-102	80/3	0.0	C	0.0	–	–	6
7	–	–	0.0	A	2.0	20/1	RM 101 & 102 LTG	8
9	–	–	0.0	B	0.0			10
11			0.0	C	0.0			12
13			0.0	A	0.0			14
15			0.0	B	0.0			16
17			0.0	C	0.0			18

TOTAL CONNECTED LOAD (KVA) 8.6
TOTAL DEMAND LOAD (KVA) 9.1
FEEDER AMPERES DEMAND 10.9

PANEL TAG: EL27 — VOLTAGE: 120/208 VAC, 3-PHASE, 4-WIRE
MOUNTING: SURFACE — MAINS: LUG [ ] C.B. [X] AMPS: 100
FEEDER: (SEE RISER DIAGRAM) — FEED THRU LUG [ ]
PANEL TYPE: LTG & APPLIANCE — MIN A.I.C.: (A)

CKT	ITEM OR AREA SERVED	O/C PROT	DIST KVA	P	DIST KVA	O/C PROT	ITEM OR AREA SERVED	CKT
1	RM 102 RECEPTACLES	20/1	0.0	A	0.0	15/1	EF-1	2
3	CPT TRANSFER SCHEME	50/1	4.8	B	0.0			4
5	CPT TRANSFER SCHEME	50/1	4.8	C	0.0			6
7			0.0	A	0.0			8
9			0.0	B	0.0			10
11			0.0	C	0.0			12
13			0.0	A	0.0			14
15			0.0	B	0.0			16
17			0.0	C	0.0			18

TOTAL CONNECTED LOAD (KVA) 9.6
TOTAL DEMAND LOAD (KVA) 9.6
FEEDER AMPERES DEMAND 26.6

PANEL TAG: DP102 — VOLTAGE: 125VDC
MOUNTING: SURFACE — MAINS: LUG [ ] C.B. [X] AMPS: 150
FEEDER: (SEE E-602) — FEED THRU LUG [ ]
PANEL TYPE: LTG & APPLIANCE — MIN A.I.C.: (A)

CKT	ITEM OR AREA SERVED	O/C PROT	DIST KVA	P	DIST KVA	O/C PROT	ITEM OR AREA SERVED	CKT
1	SWITCHGEAR SECTION	20/2	0.3	+	0.3	20/2	SWITCHGEAR SECTION	2
3	–	–	0.0	–	0.0	–	–	4
5	SWITCHGEAR SECTION	20/2	0.3	+	0.3	20/2	SWITCHGEAR SECTION	6
7	–	–	0.0	–	0.0	–	–	8
9	SWITCHGEAR SECTION	20/3	0.3	+	0.3	20/2	SWITCHGEAR SECTION	10
11	–	–	0.0	–	0.0	–	–	12
13	SWITCHGEAR SECTION	20/3	0.3	+	0.3	20/2	SWITCHGEAR SECTION	14
15	–	–	0.0	–	0.0	–	–	16
17	SWITCHGEAR SECTION	20/4	0.3	+	0.3	20/2	SWITCHGEAR SECTION	18
19	–	–	0.0	–	0.0	–	–	20
21	SWITCHGEAR SECTION	20/4	0.3	+	0.0			22
23	–	–	0.0	–	0.0			24
25	SWITCHGEAR SECTION	20/5	0.3	+	0.0			26
27	–	–	0.0	–	0.0			28
29	SWITCHGEAR SECTION	20/5	0.3	+	0.0			30
31	–	–	0.0	–	0.0			32
33	SWITCHGEAR SECTION	20/6	0.3	+	0.0			34
35	–	–	0.0	–	0.0			36
37	SWITCHGEAR SECTION	20/6	0.3	+	0.0			38
39	–	–	0.0	–	0.0			40
41			0.0	+	0.0			42

TOTAL CONNECTED LOAD (KVA) 3.0
TOTAL DEMAND LOAD (KVA) 4.5
FEEDER AMPERES DEMAND 36.0

SHEET GENERAL NOTES

A. SEE SHEET E-001, E-101, E-102, E-602 FOR ADDITIONAL INFORMATION AND GENERAL ELECTRICAL NOTES.

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER — DARRELL L. BREN — 6729 — REG. INC. — DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
TSP PROJECT #04121073 - PRIORITY 2

To Solve. To Excel. Together.

Drawing Title: ELECTRICAL EQUIPMENT ELEVATIONS AND DETAILS

Approved: Project Director

Project Title: Upgrade Campus Electrical Service

Project Number: 438-13-121
Building Numbers: 5 AND 27
Location: Sioux Falls, South Dakota
Drawing Number: E-501
Date: 04/17/2013 | Checked: DLB | Drawn: JWN
Dwg. 12 of 14

FINAL CONSTRUCTION DOCUMENTS

Office of Construction and Facilities Management
Department of Veterans Affairs

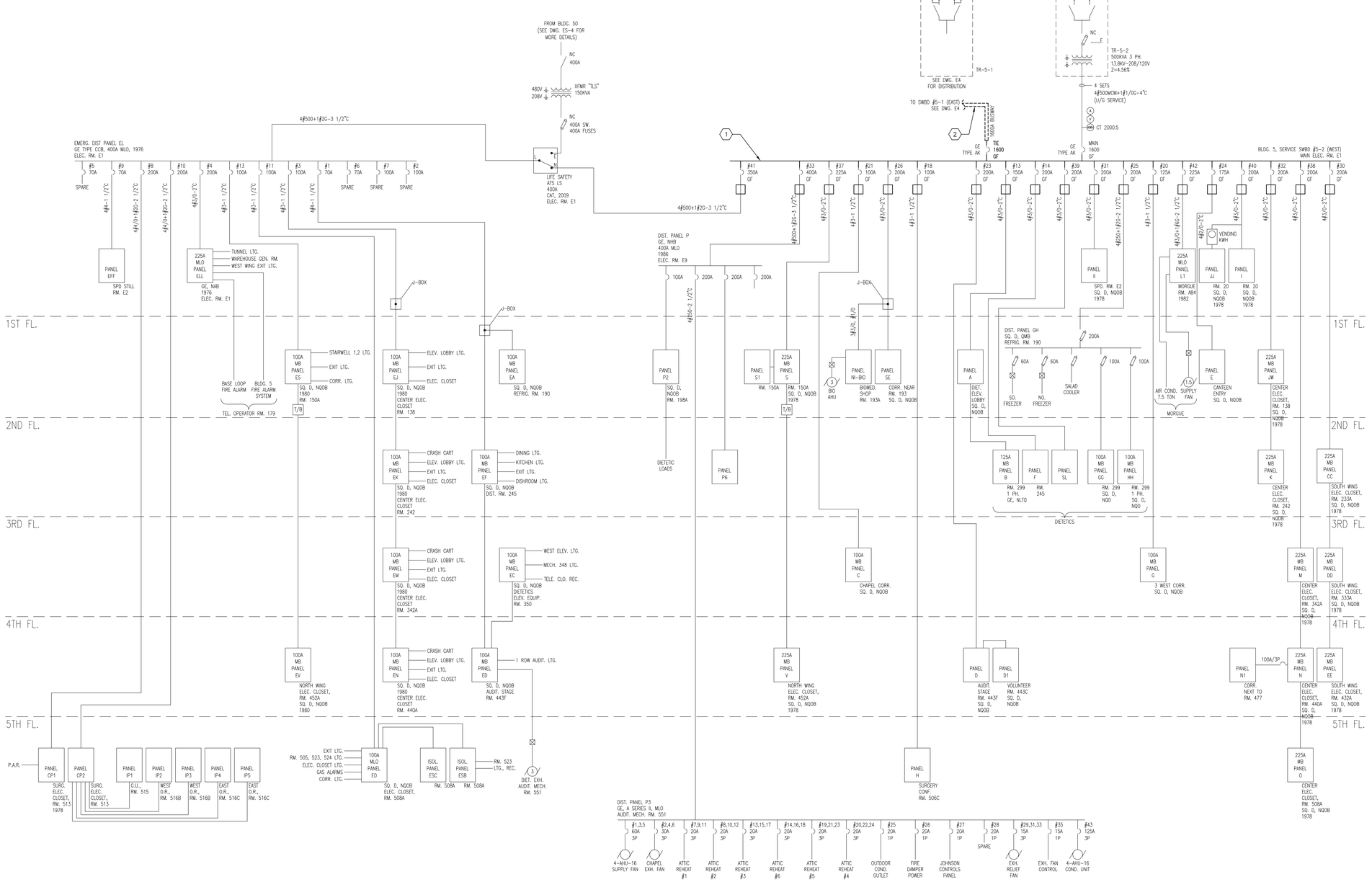
VA FORM 08-6231

SHEET GENERAL NOTES

A. SEE SHEET E-101 FOR ADDITIONAL GENERAL NOTES.

SHEET KEYNOTES

1. REPLACE SWBD 5-2. SEE SHEET E-101 FOR ADDITIONAL INFORMATION. SEE SHEET E-101 FOR ADDITIONAL INFORMATION AND PANEL LAYOUT.
2. REMOVE AND DISPOSE OF BUSSWAY.



FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER — REG. NO. 6729 — DARRELL L. BREN — DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
To Solve. To Excel. Together.
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: ELECTRICAL RISER DIAGRAM - BUILDING 5-2

Approved Project Director:

Project Title: Upgrade Campus Electrical Service

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JWN

Project Number: 438-13-121

Building Numbers: 5 AND 27

Drawing Number: E-601 Dwg. 13 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

CABLE TYPES
K1 – 3–1/C, SHIELDED #2/0 COPPER, 15KV 133% EPR INSULATION, 1–#1 XHHW–2, 600 VOLT GROUND.

SHEET GENERAL NOTES

A. SEE SHEET E–101 FOR ADDITIONAL GENERAL NOTES.

B. SEE SHEET E–102 FOR ADDITIONAL INFORMATION.

C. SEE SHEET E–501 FOR UNDER 600V CIRCUIT SCHEDULE.

D. SEE SHEET E–501 FOR PRIMARY VOLTAGE DUCT BANK DETAIL.

E. ELECTRICAL CONTRACTOR SHALL ENSURE THAT A MINIMUM OF 2 OF THE FOLLOWING CAMPUS POWER SOURCES ARE AVAILABLE AT ALL TIMES DURING REPLACEMENT AND ADDITION OF 15KV SWITCHGEAR: FEEDER 1, FEEDER 2, EXISTING 2MW GENERATOR, TEMPORARY 2MW GENERATOR.

F. CONTACT XCEL ENERGY RON AAKER AT 605–339–8341 FOR ALL UTILITY COORDINATION AND ASSOCIATED COSTS.

G. ELECTRICAL CONTRACTOR SHALL SUBMIT MEDIUM VOLTAGE SWITCHGEAR APPLICATION TO XCEL ENERGY.

SHEET KEYNOTES

PHASE I:

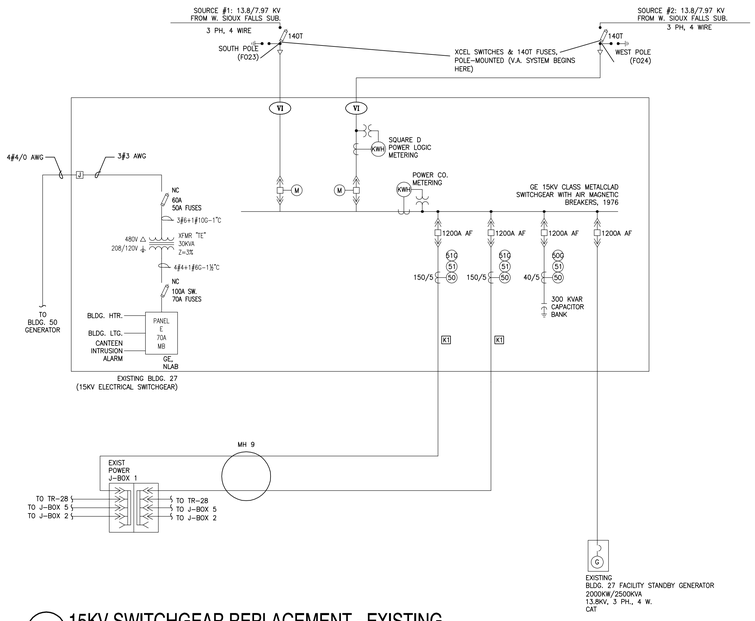
1. CONTRACTOR SHALL SWITCH OVER ALL CAMPUS TRANSFORMERS TO THIS FEEDER. PROVIDE 2 WEEKS NOTICE OF SWITCH OVER. COORDINATE WITH THE VA DURING SWITCH OVER.
2. COORDINATE WITH UTILITY TO DISCONNECT 15KV SERVICE F024 FROM EXISTING BUILDING 27 SWITCHGEAR. UTILITY SHALL REMOVE CABLE BACK TO UTILITY SWITCHES.
3. UTILITY SHALL PROVIDE A NEW 15KV FEEDER FROM XCEL ENERGY SERVICE POLE TO NEW BUILDING 15KV SWITCHGEAR. SEE E–102 FOR ADDITIONAL INFORMATION.
4. PROVIDE A THREE PHASE, 15KV, SECTIONALIZING CABINET WITH 6 PARK STANDS (2 PER CONDUCTOR PER FEEDER), TEN LOAD BREAK CONNECTORS FOR PHASE A, PHASE B, PHASE C, NEUTRAL AND GROUND (TWO PER CONDUCTOR PER FEEDER), WIND STOP, GREEN POWDERCOAT FINISH, STAINLESS STEEL LIFTING PROVISIONS AND HARDWARE, 12 GAUGE STEEL CONSTRUCTION, PENTAHEAD BOLT WITH PADLOCK PROVISIONS. LABEL AS "POWER J–BOX 6". SECTIONALIZING CABINET SHALL BE CAPABLE OF TWO SEPARATE ISOLATED FEEDERS.
5. PROVIDE 15KV SWITCHGEAR 102. AVAILABLE UTILITY FAULT CURRENT IS 4009A. SEE E–102 AND E–501 FOR ADDITIONAL INFORMATION.
6. DISCONNECT EXISTING FEEDER FROM POWER J–BOX 1. PULL CONDUCTORS BACK TO SOURCE. CONDUIT SHALL REMAIN. CONNECT NEW FEEDER FROM 15KV SWITCHGEAR 102 TO EXISTING POWER J–BOX 1.
7. PROVIDE NEW 15KV FEEDER FROM SWITCHGEAR 102 TO EXISTING JUNCTION BOX 1. INTERCEPT EXISTING CONDUIT AS SHOWN.
8. STUB OUT A 4" CONDUIT FROM NEW POWER J–BOX 6 TO LOCATION SHOWN. SEE ES101.
9. DISCONNECT EXISTING #3AWG CONDUCTORS FROM JUNCTION BOX. PROVIDE NEW CONDUCTORS AND CONDUIT FROM J–BOX TO NEW 100A FUSED SWITCH. SPLICE CONDUCTORS TO EXISTING #1/0AWG CONDUCTORS. SEE E–102.
10. REPLACE FUSED SWITCH.
11. PROVIDE SQUARE D POWER LOGIC METERING ON NEW SWITCHGEAR. PROVIDE ADDITIONAL COMPONENTS, WIRING, ETC AS REQUIRED TO INTERFACE WITH EXISTING SQUARE D POWER LOGIC SYSTEM.
12. SEE SHEET E–102 AND E–501 FOR ADDITIONAL INFORMATION ON ELECTRICAL EQUIPMENT.

PHASE II:

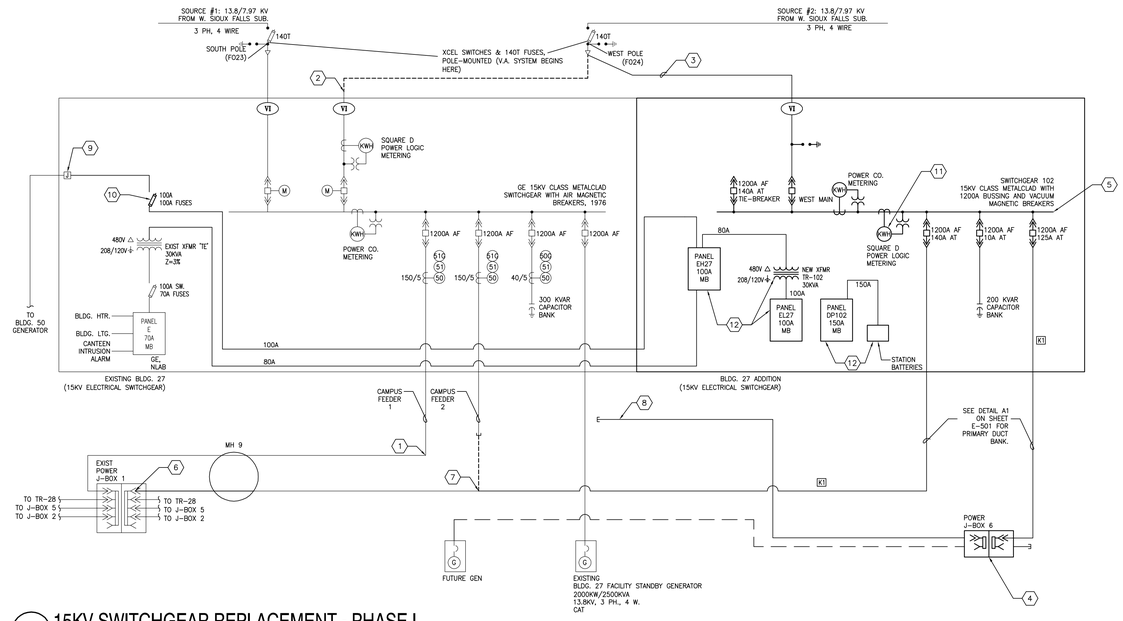
13. CONTRACTOR SHALL SWITCH OVER ALL CAMPUS TRANSFORMER TO THIS FEEDER. PROVIDE 2 WEEKS NOTICE OF SWITCH OVER. COORDINATE WITH THE VA DURING SWITCH OVER.
14. PRIOR TO REPLACEMENT OF EXISTING 15KV SWITCHGEAR, DISCONNECT EXISTING FEEDER FROM 2MW GENERATOR. CONNECT NEW FEEDER FROM EXISTING 2MW GENERATOR TO 15KV SWITCHGEAR 102.
15. REMOVE CONDUCTORS BACK TO SOURCE, INTERCEPT EXISTING CONDUIT WITH NEW CONDUIT FROM POWER J–BOX 6. INSTALL NEW TYPE K1 FEEDER PER FEEDER SCHEDULE.
16. AFTER CONNECTION OF EXISTING 2MW GENERATOR TO NEW 15KV SWITCHGEAR, REMOVE AND DISPOSE OF EXISTING 15KV SWITCHGEAR. DISCONNECT EXISTING FEEDER 1 CONDUCTORS FROM DEMOLISHED 15KV SWITCHGEAR. CONDUCTORS SHALL REMAIN FOR REUSE. ALL CONDUITS ENTERING AND EXITING EXISTING BUILDING SHALL REMAIN.
17. UTILITY SHALL DISCONNECT 15KV SERVICE FO23 FROM EXISTING BUILDING 27 SWITCHGEAR. UTILITY SHALL REMOVE CABLE BACK TO UTILITY SWITCHES.

PHASE III:

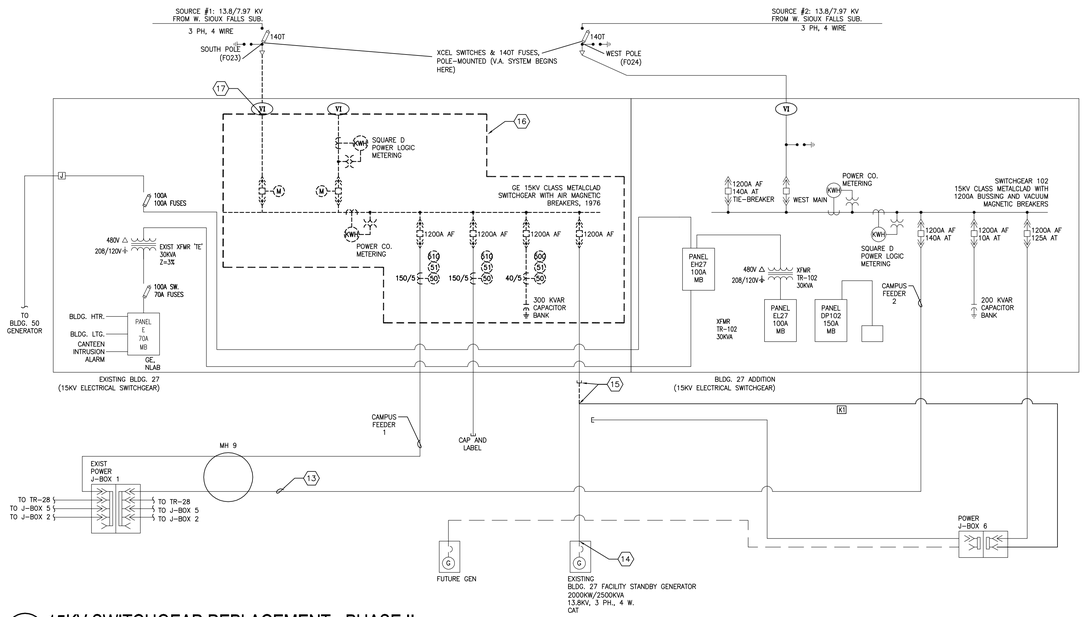
18. PROVIDE NEW 15KV SWITCHGEAR IN EXISTING BUILDING. CONFIGURE SWITCHGEAR SO THAT EXISTING CONDUITS AND CONDUCTORS ARE REUSED. AVAILABLE UTILITY FAULT CURRENT IS 4009A. SEE ELEVATION ON SHEET E–501.
19. EXTEND EXISTING 4" CONDUIT INTO J–BOX 6. CONCRETE ENCASE CONDUITS PER DETAIL ON SHEET E–501.
20. PROVIDE 15KV 200A OVERHEAD CABLE CONNECTING SWGR 101 AND SWGR 102.
21. PROVIDE SQUARE D POWER LOGIC METERING ON NEW SWITCHGEAR. PROVIDE ADDITIONAL COMPONENTS, WIRING, AS REQUIRED TO INTERFACE WITH EXISTING SQUARE D POWER LOGIC SYSTEM.



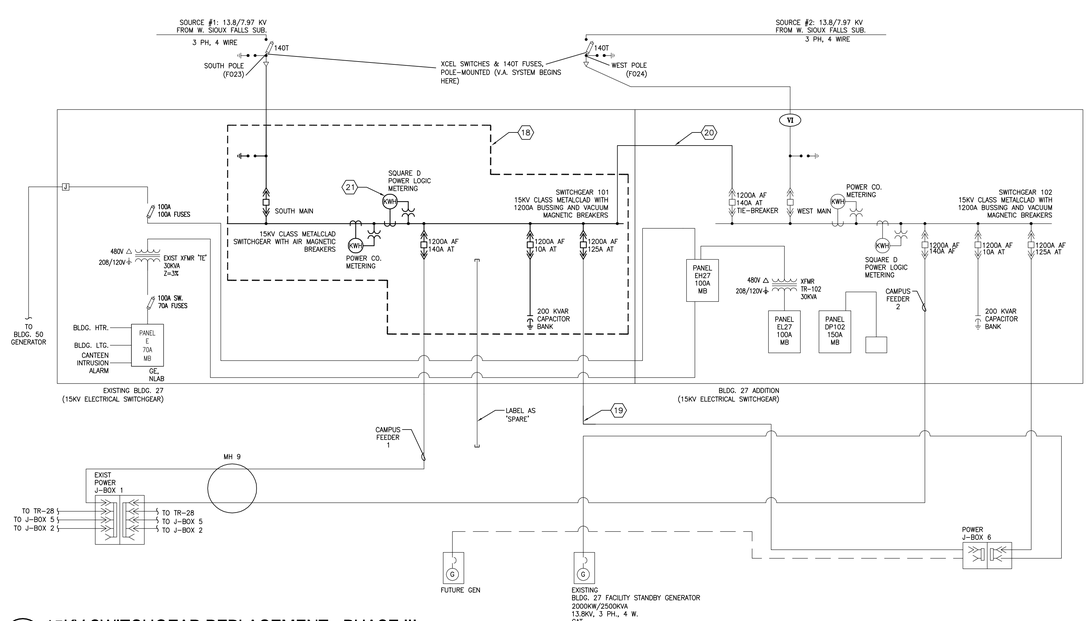
D1 15KV SWITCHGEAR REPLACEMENT - EXISTING
SCALE: NONE



D4 15KV SWITCHGEAR REPLACEMENT - PHASE I
SCALE: NONE



F1 15KV SWITCHGEAR REPLACEMENT - PHASE II
SCALE: NONE



F5 15KV SWITCHGEAR REPLACEMENT - PHASE III
SCALE: NONE

FINAL CONSTRUCTION DOCUMENTS

Revisions	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER — REG. NO. 6729 — DARRELL L. BREN — STATE OF SOUTH DAKOTA — DATE: 04/17/13

ARCHITECT/ENGINEERS:

TSP, Inc.
1112 N. West Ave.
Sioux Falls, SD 57104
phone: (605) 336-1160
fax: (605) 336-7926
www.teamtsp.com
To Solve. To Excel. Together.
TSP PROJECT #04121073 - PRIORITY 2

Drawing Title: ELECTRICAL RISER DIAGRAM - BUILDING 27

Approved: Project Director

Project Title: Upgrade Campus Electrical Service

Location: Sioux Falls, South Dakota

Date: 04/17/2013 | Checked: DLB | Drawn: JWN

Project Number: 438-13-121

Building Numbers: 5 AND 27

Drawing Number: E-602

Dwg. 14 of 14

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08–6231